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INSIDE

Dueling databases
Developers wooed
Page 3

Window On
CAD/CAM, AI, Coprocessors
Page 12

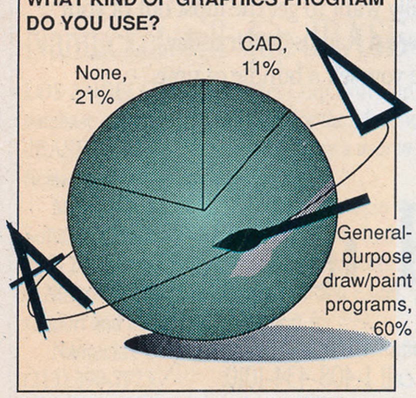
Reviews
VersaTerm, Suitcase
Page 22

"The plan is to continue finding holes in the market and filling them."

Adobe profile
Kevin Wandryck
on PostScript provider's future
Page 9

ZOOM IN

WHAT KIND OF GRAPHICS PROGRAM DO YOU USE?



Source: July 1987 Creative Strategies/ MacWEEK

PostScript in living color

300-dpi thermal printer will be demonstrated at Seybold

BY CLAIR WHITMER
MacWEEK Staff

MOUNTAIN VIEW, Calif. — Adobe will demonstrate a color PostScript printer at the Seybold conference in September, according to Charles Geschke, executive vice president of Adobe Systems Inc.

The company said the conference will be the site of a "technology demonstration" only, not a new product introduction. Nevertheless, the demonstration may usher in a new age of low-cost color PostScript printing.

The printer uses thermal transfer technology with a Mitsubishi G650 engine capable of 300-dpi resolution and seven-color output. The printer also includes a PostScript interpreter. Geschke said that although Adobe will be demonstrating the printer and has used it in-house for several months, the company "is not going into the printer business. It will be a technology demonstration showing what PostScript color output will look like," said Geschke.

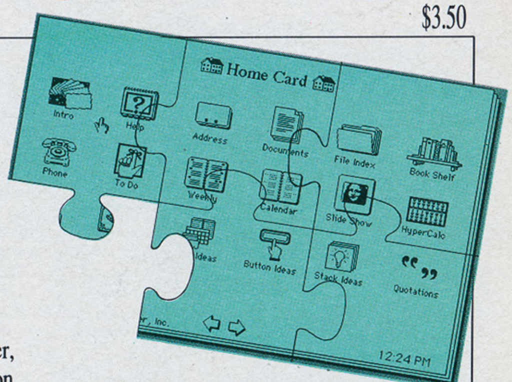
The PostScript language itself has always supported color-imaging models, said Liz Bond, marketing manager at Adobe. However, it is company policy not to release information about specific implementations until a product is actually on the market.

The color PostScript technology will be used to print and to make color slides and color separations, according to Bond.

Adobe does not have an announced marketing agreement with Mitsubishi Electronics America Inc., said Geschke, leaving it unclear what company, if any, will be manufacturing the printer for the retail market. "It's a possibility that we would have an agreement with someone, though not necessarily with Mitsubishi," said Geschke.

Cal Mura, assistant manager for image

See ADOBE, Page 24

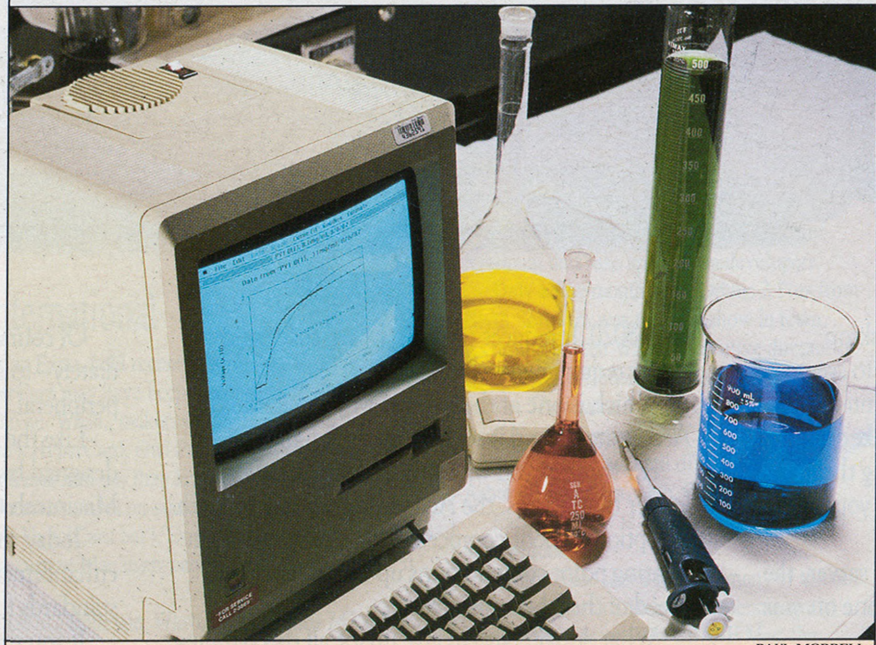


The missing piece of HyperCard info

BY RIC FORD
MacWEEK Staff

BOSTON — Lucky Mac Expo attendees headed home with shrink-wrapped copies of Apple's new HyperCard under one arm and Danny Goodman's 700-page tome, "The Complete HyperCard Handbook," under the other. But one fundamental piece of docu-

See HYPERCARD, Page 24



PAUL MORRELL

Mac moves into the laboratory

BY RICK LEPAGE
MacWEEK Staff

BOSTON — The role of the Mac in scientific laboratory applications got a strong boost at the recent Mac Expo held here with the introduction of hardware and software to interface Macs with laboratory instruments.

"We definitely see increased interest in the Mac market. The shift is on," said Gene Calvano, president of International Data Acquisition and Control in Amherst, N.H. "There are major corporations that have made a commitment to the Macintosh. Their people in the R&D departments, who might have a need for data acquisition, are looking to the Mac."

"The Mac's capabilities and availability of engineering products place it in a league with anybody, and I even think that the Mac has gone quite a few steps beyond what other sys-

See LABORATORY, Page 24

Does MultiFinder mean demise of DAs?

BY EMILY BROWER
MacWEEK Staff

CUPERTINO, Calif. — The introduction of a critical new piece of the Macintosh operating system, MultiFinder, casts doubt on the future of a familiar old piece, Desk Accessories.

MultiFinder's multitasking capability, which allows users to open and run several applications simultaneously, could replace the need for Desk Accessories, but there is debate over how soon it will happen.

"Desk Accessories will be affected only to the extent that MultiFinder is accepted by Macintosh users. People with less than 2 Mbytes of memory will not be using the multitasking feature of MultiFinder," said Don Brown of CE Software of Des Moines, Iowa.

The short-term effects of MultiFinder will be dictated by the availability and cost of memory for the average Mac user, said Andrew Singer of Think Technologies Inc. in Lexington, Mass.

As MultiFinder is accepted by Macintosh users and the average memory of the Macintosh increases, "eventually MultiFinder will kill DAs," he said.

"The concept of the DA will just die out. It is really simpler to have one class of applications rather than two," said Tom Evslin, presi-

See DESK ACCESSORIES, Page 24

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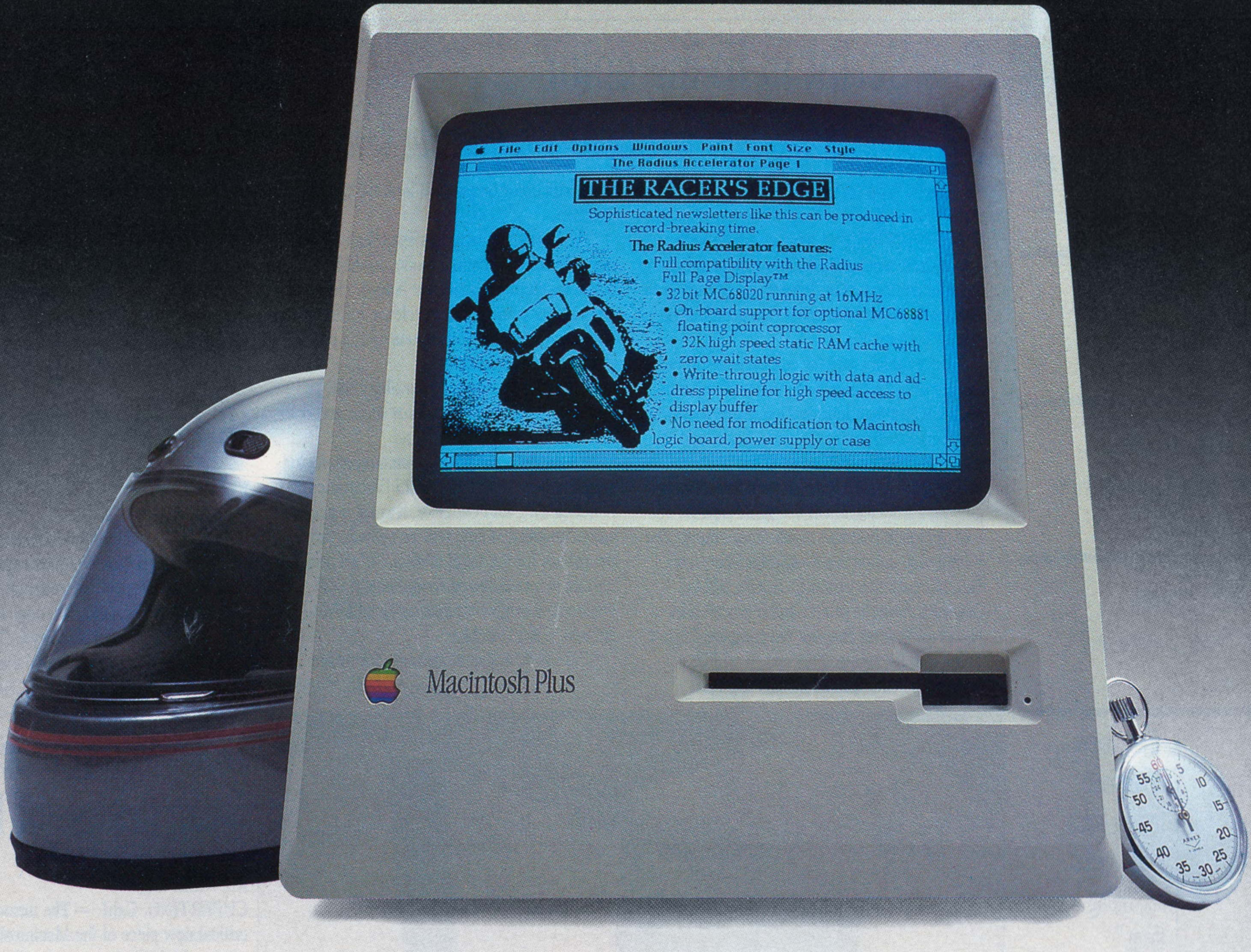
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The Radius Accelerator Page 1
Macintosh Plus

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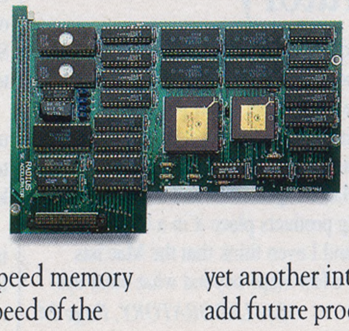

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CONTENTS

NEWS

Apple shows applications run faster on EtherTalk 05
Rebuilding is an alternative to costly Canon printer cartridges 06
Latest Apple product links users to 2 million fax machines 08

BUSINESS WATCH

Adobe's silver fortunes may have a cloudy lining 09
Developers level criticism at Apple's pricing policies 09

PRODUCTS

WINDOW ON

CAD/CAM: Designers find Macintosh tools easier to use 12
Artificial Intelligence: Reality fails to match hype 16
Coprocessors: Bridging computer standards 19

REVIEWS

Abelbeck Software's terminal emulator and file-transfer package 22
Software Supplies' Suitcase packs more Desk Accessories into a Mac 23

DEPARTMENTS

MarketWEEK on computer-aided design 11
Mac the Knife 26

LATE NEWS

Rebate for MacWrite owners who buy Word for the Mac

REDMOND, Wash. — Microsoft Corp. announced a rebate offer for any MacWrite owner who purchased Microsoft Word for the Macintosh between June 15 and Sept. 30.

The company will send $75 to each user who submits an original MacWrite disk, dated proof of purchase of Word and the registration card from the new version of Word. Users with multiple copies of MacWrite can select either cash rebates or additional copies of Word when they buy Microsoft Word for the Macintosh. Word for the Macintosh will read and write files in the MacWrite format, so users who switch will be able to access their MacWrite documents.

Microsoft Corp. is located at 16011 N.E. 36th Way, P.O. Box 97017, Redmond, Wash. 98073; (206) 882-8080.

Guide 2.0 released by Owl International

BELLEVUE, Wash. — Apple's prediction at Mac Expo, held recently in Boston, that the IBM world will take more than a year to match HyperCard may have been too optimistic.

That's the view of Owl International of Bellevue, Wash., makers of Guide software, a PC- and Mac-compatible product that is similar to Apple's HyperCard. Owl President Alan Boyd said Guide Version 2.0 is more flexible, powerful and easier to use than HyperCard.

The two products share an ability to link information with on-screen Mouse-activated buttons, Boyd said. But Guide is useable on a Mac 512K; HyperCard isn't. One big difference is the price tag. HyperCard will be bundled with new Macs; current Mac users can buy it for $49. Guide 2.0 sells for $199.95.

Owl International is located at 14218 N.E. 21st St., Bellevue, Wash. 98007; (206) 747-3203.

Nantucket will ship dBASE-compatible relational database

LOS ANGELES — Nantucket Corp. will ship McMax, the only dBASE-compatible relational database management software for the Mac, next week. While several other programs can read dBASE data files, McMax will allow a user to run DOS dBASE applications without major modifications to the program code.

McMax is priced at $295 and will begin shipping Sept. 1 through Ingram, Micro D Inc. and Softsel Computer Products Inc. McMax is not copy protected and requires a Mac with a minimum of 512 Kbytes of RAM. Nantucket supports Microsoft's RTF format, which permits data transfer to Microsoft Word, Microsoft File and Excel. The company provides 30 days of free telephone support and a full year of support for $99.

Nantucket Corp. is located at 12555 W. Jefferson Blvd., Suite 300, Los Angeles, Calif. 90066; (213) 390-7923.

NuDATA releases workstation system

BY CLAIR WHITMER
MacWEEK Staff

SANTA CLARA, Calif. — NuDATA recently introduced a big workstation with big memory storage capabilities aimed at the "big guys" market.

The Giga Tower is intended for users in large corporations or university environments. It includes a Mac II CPU, color monitor and keyboard, a 800-Kbyte floppy drive, a 40-Mbyte tape drive and 10-Mbyte removable media cartridge backup units. Also included are hard-disk drives in sizes from 300 Mbytes to a whopping 1.2 Gbytes.

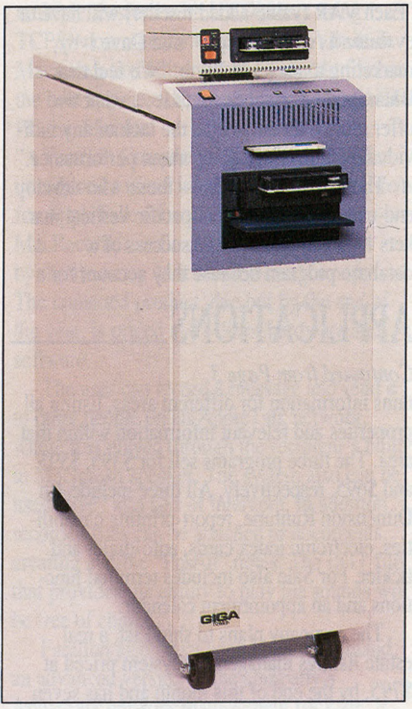
The price for the Giga Tower ranges from $18,950 for the 300-Mbyte version to $28,000 for 1.2 Gbytes. When the Tower ships, by mid-September, other options will include streamer tape and optical WORM drive backup.

The 29-inch-high unit is intended as a complete workstation solution for users with extensive hardware needs. Even at $28,000, buying the Tower is less expensive than buying the components separately at a computer store, according to Eric Herzog, NuDATA director of sales and marketing.

Although the Tower is being billed as an ideal file server, NuDATA also is part of an effort to make the Mac II compete with low-end Sun, Apollo and Digital Equipment Corp. workstations.

The hard-disk drive is available in formats of 300, 600 or 900 Mbytes or 1.2 Gbytes. The drives have access times that vary from 16.5 to 28 milliseconds, with an average data-transfer rate of 15 megabits per second.

NuDATA is located at 3206 Scott Blvd., Santa Clara, Calif. 95054; (408) 727-1049. ■



COURTESY NUDATA

NuDATA's Giga Tower.

Database war centers on applications

Blyth, ACIUS, Ashton-Tate vie for developers

BY JIRI WEISS
MacWEEK Staff

The battle is on for the hearts and minds of relational database application developers.

Only a few months ago, Omnis 3 Plus from Blyth Software was the only show in town, according to Ken Wasch, executive director of the Software Publishers Association in Washington. Then came 4th Dimension from ACIUS of Cupertino, Calif., and now, finally, there is the long-awaited dBASE Mac from Ashton-Tate of Torrance, Calif.

Each company is trying to lure developers to its product.

Ashton-Tate sent a letter to many of the 600 registered Omnis 3 Plus developers recently inviting them to preview dBASE Mac, the Macintosh version of the company's popular PC-based relational database, during the Boston Mac Expo. Those who attended were promised the $495 program free when it is released this month.

Mitch Wayne, a developer who attended the seminar held at Boston's World Trade Center, said he and about 30 others were briefed on the new product and then given a chance to play with a prototype on an SE.

But Blyth Software, the San Mateo, Calif., publisher of Omnis 3 Plus, is not calling foul.

See OMNIS, Page 4

4th Dimension launches a parade of applications

BY CLAIR WHITMER
MacWEEK Staff

The much-heralded release of ACIUS' 4th Dimension has led a parade to the marketplace of commercial applications using the database.

The Cupertino, Calif., company should release a list of members of the ACIUS Developer Program within a month, many of whom will eventually bring products to the market, said ACIUS Director of Finance Katherine Henkens.

If there is confusion about which companies have actually released products and in which order, it is because ACIUS has not begun the process of certifying developers, Henkens said. The company will begin handing out certification to specific developers, she said.

It appears that the winner of the "first to ship" award is Softworks of Huntington, Conn., which shipped three applications at the beginning of this month. The programs — Track, Lead and For Sale — are aimed at the real estate market, an area that Softworks considers its specialty.

Track is a client- and prospect-tracking program; Lead is designed to classify leads from user-definable categories such as personal leads and expired listings; and For Sale main-

See APPLICATIONS, Page 4

OMNIS

Continued from Page 3

"Each VAR (value-added reseller) will have to evaluate its own position," said Dave Ivey, marketing manager at Blyth. "We feel that when it comes right down to it … what we offer more than outweighs the lack of any individual feature. I'm talking about performance."

The war of the VARs — those who develop end-user applications for specific vertical markets — is important to the success of a database program because they account for a large fraction of sales, according to Wasch.

Wayne said he was impressed by at least some of the aspects of what he saw. "What impressed me most was the size of the manual," said the Kentucky Omnis 3 Plus developer who specializes in high schools and the construction industry. "If that's an indication of the program's ease of use, dBASE Mac may attract individuals who are intimidated by the complexity of Omnis 3 Plus and by the 4-pound manual that comes with 4th Dimension."

Wayne said he plans to write programs in four database languages: Omnis 3 Plus, dBASE Mac, 4th Dimension and Double Helix from Odesta Corp. of Northbrook, Ill., for personal applications.

But trying to develop for so many environments at once may just be too labor-intensive, said Jeff Morgan, president of Pacific Software Engineering, a developer of point-of-sale systems in San Francisco. "It's like keeping three different engines in tune," Morgan said.

Morgan, who received an invitation from Ashton-Tate but did not make it to Boston, said he is interested in comparing dBASE to Omnis 3 Plus. He has explored 4th Dimension and likes its superior graphics and its ability to do things like call a credit-verification number automatically while processing a sale. But for existing applications, he said he is sticking with Omnis 3 Plus.

Ashton-Tate faces an uphill battle, Wayne said, because its product is not multi-user, the company has nobody with name recognition and developers are weary because Ashton-Tate demonstrated its product a year ago. There is another reason: "IBMers are notoriously suspect anyway," Wayne said. ■

APPLICATIONS

Continued from Page 3

tains information for different areas, listing all properties and relevant information within that area. The three programs sell for $395, $595 and $695, respectively. All three include 4th Dimension Runtime, report-printing capabilities, electronic index cards, auto-dialer and tickler. For Sale also includes terminal functions and an appointment calendar.

The company plans to ship List, a real estate listings management system priced at $795, by the end of this month and has seven other packages planned for release by the end of this year. Softworks has attempted to design several of these in other databases, namely Omnis 3 from Blyth Software of San Mateo, Calif., and Double Helix from Odesta Corp. of Northbrook, Ill. "We tried, but we just couldn't do what we wanted to with them," said Softworks President John DiBiasi.

Although it is billing its sales management program, Prospect Plus, as the first commercial application using 4th Dimension, cti software actually looks as if it will be the second company out of the gate. The program was introduced at Mac Expo two weeks ago but will not start shipping until Sept. 15, according to company spokeswoman Greta Hoffmann.

The package is aimed at professionals in sales and marketing, providing them with quick access to data lists of sales "prospects."

The program, priced at $275 with 4th Dimension Runtime and $195 stand-alone, allows the user to prioritize the list according to user-specified criteria. It prints mailing labels, exports data for mail-merge functions and includes dialer functions for a modem.

Macintosh Solutions of Del Mar, Calif., has a long list of 4th Dimension applications poised for release. The first of these will probably be a point-of-sale program with invoicing abilities, due to start shipping by early October, followed by a general ledger program.

Other projects in the works at Macintosh Solutions include applications for Time-Share developers, a direct-mail program that converts data from other databases into 4th Dimension format, a contractors' business management application and Lenders Construction Services, for institutions that make construction loans.

Softworks can be reached at P.O. Box 2285, Huntington, Conn. 06484; (203) 926-1116.

cti software can be reached at P.O. Box 50272, Austin, Texas 78763; (512) 343-8255.

Macintosh Solutions is located at 241 12th St., Del Mar, Calif. 92014; (619) 481-0479. ■

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Apple shows applications run faster on EtherTalk

BY RIC FORD
MacWEEK Staff

BOSTON — Highlighting a range of new and innovative networking products, Apple used its 3Com-developed EtherTalk card in the Mac II and Kinetics' EtherPort SE for the Mac SE to demonstrate EtherTalk at the recent Mac Expo in Boston.

Voice mail, MS-DOS and VAX connectivity also were featured at the show.

EtherTalk, developed by 3Com Corp. of Santa Clara, Calif., substitutes Ethernet hardware and software for AppleTalk at the lower levels of networking. The result: Applications work just as they do on AppleTalk, but faster. The user interface is uncomplicated. EtherTalk is selected and configured using the standard Control Panel under the Apple menu. An Ethernet-AppleTalk bridge, such as FastPath from Kinetics Inc. of Walnut Creek, Calif., is used to print to an AppleTalk LaserWriter.

Estimates of the performance boost over other networks ranged from twofold to tenfold.

Centram Systems West of Berkeley, Calif., now a subsidiary of Sun Microsystems Inc. of Mountain View, Calif., demonstrated two software products that use the Kinetics AppleTalk-Ethernet bridge, FastPath. TOPS software for Sun computers is due out in the third quarter. It will be ported later to other systems, starting with Pyramid and eventually including DEC's ULTRIX and VMS. It provides the same file-server functions now available on Macintosh and IBM PC hosts.

TOPS Terminal, due out by the end of the year, lets a Macintosh user initiate and control multiple sessions with UNIX hosts using TCP/IP communication protocols. A built-in Macintosh text editor lets the user edit files on the host and save them in Mac, UNIX and IBM PC text formats.

Farallon Computing of Berkeley, Calif., introduced a novel intercom/voice-mail system for AppleTalk networks. It's based on the MacRecorder audio digitizing system sold by the Berkeley Macintosh Users' Group. The unnamed product, due out by the end of the year, is priced at $149 for hardware and software.

The user can record a message and send it to other people on an AppleTalk network, where it is played through the recipient's built-in Macintosh speaker. The system also can be used "live" as a sort of intercom. In addition, recorded files can be attached to documents, creating audible "Post-It" notes. The INIT file that provides the ability to play the sounds will be free of charge.

Farallon also introduced HyperCommand, an advanced version of the company's AppleTalk network management package. It uses HyperCard as a user interface to Farallon's StarController hardware and features impressive graphic mapping of the network and new management tools like a "duty-cycle" chart to monitor network traffic. The package is due by the end of 1987. A price has not yet been set.

Apple apparently will not be relying on Farallon for its networking tools. An interim diagnostic package is said to be in the works with a full-blown network management system on the way later.

A portable MS-DOS machine was at the Apple booth to show that Apple is working on AppleShare PC — software and hardware to allow MS-DOS machines to function as clients of an AppleShare file server. Shipments are expected in six months.

Tangent Technologies of Norcross, Ga., on the other hand, claims to be shipping essentially the same thing now. TangentShare lists for $350 with an AppleTalk card or $150 without one.

Digital Communications Associates Inc. of Alpharetta, Ga., was at the show to talk about its MacIrma boards for the Macintosh SE and Macintosh II. The company is the best-known producer of 3270 terminal-emulation products in the MS-DOS world, and it is bringing in 3278/3279 emulation for the Macintosh along with file transfer support for CICS, TSO and CMS. ■

CORRECTIONS

In our Aug. 18 issue, the names of Nick Pavlovic, of Visual Information, and Sal Patalano, of Target Software, were misspelled. In addition, the location of Visual Information was incorrect; the company is in West Covina, Calif.

In "How Macs talk to mainframes" by Larry Stevens in the July 20 issue, White Pine Software of Amherst, N.H., was incorrectly identified as White Plains Software.

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Levco processor to add 10 mips per Mac

BY ABIGAIL CHRISTOPHER
MacWEEK Staff

BOSTON — The demand for powerful processing has increased with the push of the Mac II into markets traditionally dominated by workstation manufacturers such as Sun Microsystems of Mountain View, Calif.

As previously reported by MacWEEK at the Mac Expo, Levco surprised the industry with the announcement of its TransLink parallel processor for the Mac II and SE that can provide an additional 10 mips (million instructions per second) per Mac. The TransLink II card for the Mac II and the TransLink SE card have not yet been priced, but base versions of the boards are expected to be priced around $1,500. A fully optimized NuBus card on a Mac II with functionality of 40 mips will cost about $7,500.

The TransLink cards fit into a single slot on the SE and the Mac II. The cards can be upgraded from a base-processing acceleration of 15 MHz per 7.5 mips to 64-bit floating point, 20 MHz per 10 mips by adding "transputer modules" that plug into the TransLink cards.

The SE version can carry up to two processor modules and the Mac II board can be expanded to four .

It is theoretically possible that applications could be processed as fast as 100 mips in a network of 10 Macintoshes. However, Levco has not tested this yet.

Based on a computer called the transputer, developed by Inmos of Palo Alto, Calif., the Levco TransLink supports parallel processing of computer-intensive applications such as computer-aided design/computer-aided manufacturing (CAD/CAM) and medical imaging.

Software developers will have to write programs that exploit the TransLink processor that will set aside parts of applications — allowing two separate tasks to run in parallel.

Levco is located at 6160 Lusk Blvd., Suite C-203, San Diego, Calif. 92121; (619) 457-2011. ■

Mystic Valley announces MaxFax at expo

BY RIC FORD
MacWEEK Staff

BOSTON — Mystic Valley Research Inc. of Mount Vernon, N.Y., announced MaxFax at the Mac Expo two weeks ago. Scheduled to ship Oct. 25, MaxFax reportedly will provide transparent conversion and transmission of Macintosh files to other MaxFax stations or to standard Group 3 facsimile machines.

The Mac also can receive data from facsimile machines and convert it to MacPaint files and other formats. If both sender and receiver are MaxFax stations, Mac files of any type can be sent at 9,600 baud with error checking.

A MaxFax user sends a file by selecting MaxFax in the Chooser Desk Accessory and then "printing" to it. A dialog box then presents the options for transmission. The Mac user on the other end may receive the file in the background while working with another application. A message on the screen tells him something is being received. He later decompresses the file with a separate application.

Extra-cost options include a database of 85,000 fax addresses, an AppleTalk configuration and store-and-forward capabilities through a mainframe computer operated by the company. ■

Smartcom update brings Mac modems up to speed

BY JIRI WEISS
MacWEEK Staff

ATLANTA — A new version of communications software from Hayes Microcomputer Products Inc. will give Macintosh users access to the company's 2,400- and 9,600-bit-per-second modem technology.

The $149 Smartcom II Version 3.0 software supports Hayes' V-series products, previously only available to PC users, the company said.

Series V includes 2,400 bps and 9,600 bps auto-dial error-controlled modems that compress data and automatically adjust to the speed of the modem on the receiving end. The modems' data compression adapts the transmission rate to the type of file being transferred, in some cases almost doubling transmission rates, Hayes said.

Users of older Hayes 1,200- and 2,400-bps Smartmodems can add Hayes V features by attaching a V series Modem Enhancer. The Modem Enhancer, a unit the same size as the modem, is available immediately for a promotional price of $199. Starting Oct. 1, it will retail for $349, the company said.

Smartcom II supports MacBinary, XMODEM and Hayes Verification file-transfer protocols. It also supports VT 100/102, VT52 and TTY terminal emulations.

While receiving a message, Smartcom II users on AppleTalk can output the message to a printer simultaneously.

An autopilot feature lets users set up scripts for repetitive tasks, such as log-on procedures, and executes them with an option key.

Hayes Microcomputer Products Inc. can be reached at P.O. Box 105203, Atlanta, Ga. 30348; (404) 449-8791. ■

Rebuilding is an alternative to costly Canon printer cartridges

BY CLIFF LEHMAN
MacWEEK Staff

Use it up. Throw it away. Buy a replacement. Simple and easy, but not the cheapest way to go with Canon EP-S laser-printer cartridges, say proponents of remanufactured cartridges.

An estimated 100 companies are offering rebuilt or refilled cartridges for $45 to $80 instead of the $90 to $125 going rates for new cartridges, according to Allen Howard, president of Accutone Inc. of Fort Lauderdale, Fla. Accutone is a supplier of toner and cartridge tools and parts to cartridge manufacturers.

As many as 5 percent of approximately 1 million Canon engines in printers and copiers worldwide use cartridges rejuvenated by one of the new cartridge-rebuilding companies, Howard said. Canon cartridges are found in Apple LaserWriters, Hewlett-Packard LaserJets and more than 30 other laser printer brands.

All of them use cartridges that contain toner, a print drum and a cleaning section for excess toner. Each cartridge prints from 2,000 to 4,000 pages before running out of toner. Until recently, the cartridges were discarded and replaced with new cartridges from Canon.

"Our official policy is if you use another manufacturer's cartridge with a Canon-brand printer, it voids the warranty," said Arnie Peters, marketing manager at Canon's printer division.

"We rate the drum at 4,000 pages. After that, print quality is affected." Peters said. "But you have these cartridge pirates buying up cartridges, pouring in toner and reselling them," Peters said.

However, cartridge remanufacturers said that with proper maintenance the light-sensitive charging drums can print up to eight times Canon's rated number of pages.

"The drums are working at high quality for as many as eight times [Canon's rated number of pages]," said Steve Russell, vice president of New England Word Processor of Needham Heights, Mass. "How much more proof do you need?"

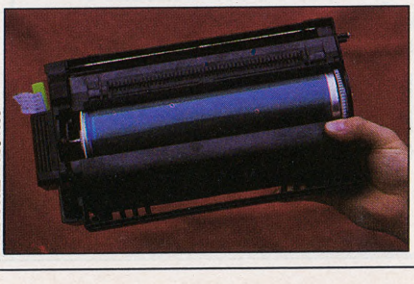
Remanufacturers take pride in the careful maintenance techniques they use to disassemble, clean and inspect each cartridge. They are equally careful to distance themselves from outfits that simply drill holes in used cartridges and refill them with cheap toner.

"The thing to watch for are holes covered with tape. It means the cartridge has been drilled and refilled without being cleaned, inspected and repaired," said M.L.Talbot of American Laser Products in McAllen, Texas.

Lacerte Tax Software in Long Beach, Calif., has been using about 40 rebuilt cartridges per month for the past year from AMS Laser Supply in Seattle.

"The quality is better from the rebuilds because we get more pages per cartridge and we get the same print quality as from the new cartridges," said Ray Chavez, vice president of sales at Lacerte. ■

Remanufacturers say rebuilt Canon cartridges can print eight times Canon's rated number of pages.



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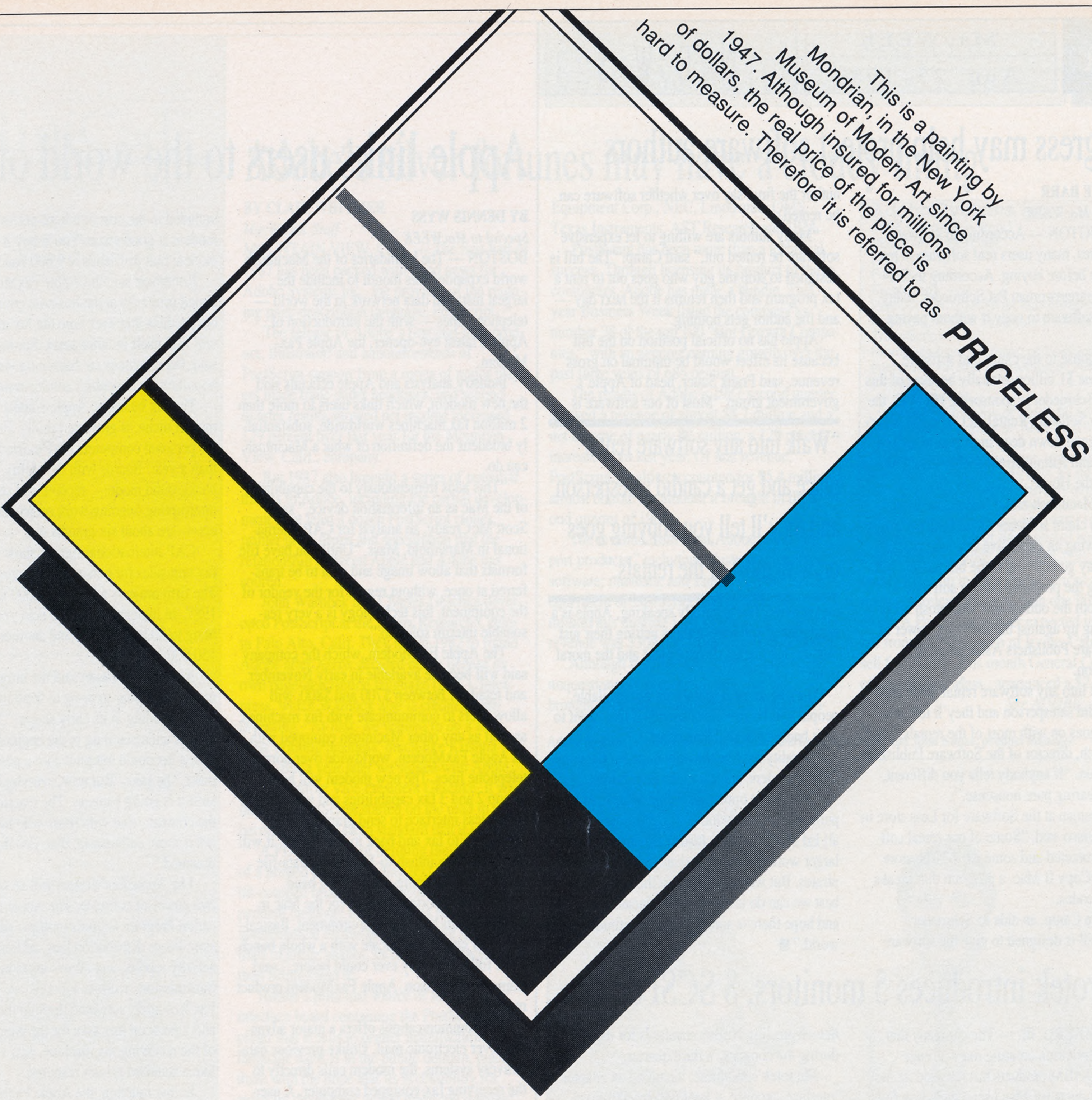


This is a painting by Mondrian, in the New York Museum of Modern Art since 1947 . Although insured for millions of dollars, the real price of the piece is hard to measure. Therefore it is referred to as ***PRICELESS***

This is MacWEEK. Not as well known yet-
but to the people on the cutting edge - ***INVALUABLE***

MacWEEK

MacWEEK. The Workstation Newsweekly.

Congress may help protect software authors

BY STEVE BARR
Special to MacWEEK

WASHINGTON — According to software rental stores, many users rent software to test it at home before buying. According to Colorado Congresswoman Pat Schroeder, many also rent software to copy it without paying for it.

In response to the claim that software authors lose $1 billion annually because of this practice, Schroeder is sponsoring HR1743, the Computer Software Rental Act. The bill is currently bogged down deep in the Courts, Civil Liberties and Administration of Justice Committee in the House.

Both Macintosh rental outlets and Macintosh users claim software rental is as necessary as test driving an expensive car. Mac rental houses may go belly-up if the bill passes. But in fighting the proposed ban on software rentals, both the outlets and Macintosh users are coming up against the lobbying power of the Software Publishers Association in Washington.

"Walk into any software rental place and get a candid salesperson and they'll tell you copying goes on with most of the rentals," said Ken Wasch, director of the Software Publishers Association. "If anybody tells you different, you are hearing pure nonsense."

A salesman at the Software for Less store in San Francisco said, "Some of our rental software is protected and some isn't." The store also sells Copy II Mac, a program that breaks software codes.

Andrea Camp, an aide to Schroeder, said the bill is designed to give the software author the final say over whether software can be rented.

"Many authors are willing to let expensive software be rented out," said Camp. "The bill is designed to stop the guy who goes out to rent a tax program and then returns it the next day — and the author gets nothing."

Apple has no official position on the bill because its effect would be minimal on gross revenue, said Frank Sauer, head of Apple's government group. "Most of our software is inexpensive. But generally speaking, Apple is a supporter of software authors getting their just monies, for market development and the moral issue.

> "Walk into any software rental place and get a candid salesperson and they'll tell you copying goes on with most of the rentals."

"I mean, even if rentals are not available, people will borrow from friends if they want to do it badly enough," Sauer said.

Morality may be the only hope for the copyright crusaders, at least in the near future.

"We're not optimistic," said Wasch, of the publisher's association. "[U.S. Attorney General] Ed Meese and the Justice Department have larger worries right now than chasing software pirates. But we must focus on the issue. The best we can do is continue to educate the public and hope there is some change in attitude in the world." ■

Microtek introduces 5 monitors, 8 SCSI disks

SCHAUMBURG, Ill. — The company that built its reputation creating mass-storage devices for IBM products has released its first line of products for Mac users, including five high-resolution monitors and eight SCSI hard disks.

Microtek Inc. (unrelated to Microtek Labs of Los Angeles) offers a range of SCSI storage in 5.25-inch hard-disk drives from 10 Mbytes to 320 Mbytes and 3.5-inch hard-disk drives in 10 Mbytes to 40 Mbytes.

The 5.25-inch kits range in speed from 65 milliseconds at 20 Mbytes to 27 milliseconds at 320 Mbytes. The 3.5-inch kits are 68 milliseconds at 10 Mbytes and 30 milliseconds at 40 Mbytes. The 20-Mbyte disk is $895; the 320-Mbyte disk sells for $6,595.

Microtek announced it will release a storage device meeting NuBus standards for the Mac II during the company's third quarter.

Microtek's monitors, including an adapter interface, produce at least 640-by-480-pixel resolution and plug directly into the Macintosh. A 13-inch Thompson monitor, UltraScan Model 4375 is $895. The 14-inch NEC MultiSync is $899. Additionally, the 15-inch NEC MultiSync Plus is $1,399; the 20-inch MultiSync XL is $3,199.

"All the screens, used with the Mac, will provide text and graphics for CAD/CAM (computer-aided design/computer-aided manufacturing) applications," said Linda McFarland, marketing director.

Microtek Inc. is located at 1000 E. State Parkway, Unit 1, Schaumburg, Ill. 60173; (312) 519-1970. ■

Vermont Microsystems to ship color-graphics controller

WINOOSKI, Vt. — Vermont Microsystems Inc. will ship a new color-graphics controller for the Mac II in the first quarter of 1988, according to Tim D'Arcy, VMI's business development manager.

"The board will be high resolution and extremely fast," said D'Arcy. "We'll be making a quantum leap over everyone else."

The controller will support 1,280-by-1,024-pixel resolution and 256 colors, according to D'Arcy. The intended list price is $2,000.

The board will plug into a Mac II slot and support "all the standard Mitsubishi-type monitors out there," D'Arcy said. The controller also will be available for AT and PS buses.

Vermont Microsystems Inc. is located at 11 Tigan St., Winooski, Vt. 05404; (802) 655-3800. ■

Apple links users to the world of fax

BY DENNIS WYSS
Special to MacWEEK

BOSTON — The boundaries of the Macintosh world expanded this month to include the largest installed data network in the world — telephone lines — with the introduction of Apple's latest eye-opener, the Apple FaxModem.

Industry analysts and Apple officials said the new modem, which links users to more than 2 million fax machines worldwide, substantially broadens the definition of what a Macintosh can do.

"This adds tremendously to the capabilities of the Mac as an information device," said Scott McCready, an analyst for CAP International in Marshfield, Mass. "Until you have file formats that allow image and data to be transferred at once, without regard for the vendor of the equipment, this technology is a very reasonable interim solution."

The Apple FaxModem, which the company said will become available in early November and retail for between $700 and $800, will allow users to communicate with fax machines, as well as any other Macintosh equipped with an Apple FaxModem, worldwide over normal telephone lines. The new modem will have Group 2 and 3 fax capabilities and will provide a seamless interface to send graphics from Macintosh to fax and back to Macintosh. It will also allow Macintosh-to-Macintosh data-file transfer at a lightning-quick 9,600 baud.

"It's an important product for the Mac in that it extends the Mac's environment. Basically, a user can communicate with a whole bunch more folks than they ever could before," said Cameron Robertson, Apple FaxModem product manager.

Fax communications offers a major advantage over electronic mail. Unlike previous data-delivery systems, the modem calls directly to the receiving fax-equipped computer. A user doesn't have to belong to such services as MCI, GEnie or CompuServe. Once past the initial purchase cost, the 24-hour-a-day fax modem is cheaper and faster than overnight delivery services like Federal Express.

What the Apple FaxModem cannot do is call such information services as CompuServe at 9,600 baud. Those services have full duplex protocols, while the Apple FaxModem is one-way or one-half duplex. The Apple FaxModem also doesn't have a scanner.

Nonetheless, industry analysts contend that the move by Apple into the fax business is astute and timely because it plugs the Macintosh's reputation for high-quality graphics into a rapidly growing area of communications technology. Also, the variable-speed modem should be welcomed by those who transmit data long distances at 1,200 or 2,400 baud.

"Bringing fax into the Mac world is a logical step, given how Macs are achieving a high penetration rate in the business world," said McCready.

"The low price is significant," said John Girton, an analyst who tracks Apple for Birr Wilson in San Francisco. "To get fax capability included in the cost of a high-performance modem is good value. You'd buy it over a modem that just sends at 9,600 baud."

Robertson said the Apple FaxModem is aimed primarily at the business environment but predicts that over time the fax modem will find itself in other areas. For instance, he said, fax machines are becoming increasingly popular with university administrators.

The fax business, Apple's latest targeted market niche, is growing rapidly. Fax boards for personal computers have existed for more than a year. Boards with the ability to fax in a background mode — receive and send without interrupting ongoing work on personal computers — are about six months old.

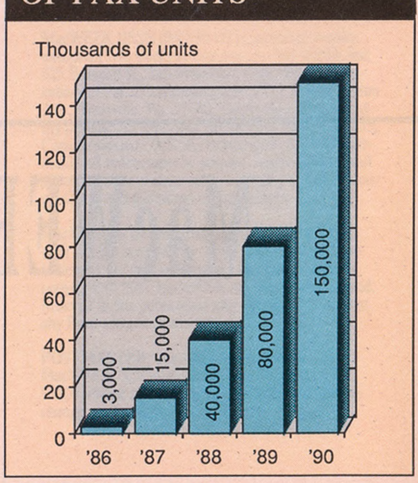
CAP International figures show about 3,000 fax unit sales for personal computers in 1986. The firm projects a leap to 15,000 in sales for 1987, an increase to 40,000 next year, a doubling to 80,000 in 1989 and another increase to 150,000 in 1990.

Apple's Robertson said the project took more than a year to bring to fruition and had tough sledding in its early stages. "There was a lack of understanding in the beginning about how a fax could integrate into a personal computer," he said. "But now, everybody who has seen it is going bananas. The reaction within the company and with those who have tried it out is more enthusiastic than I could ever have dreamed."

The Apple FaxModem will be sold with two pieces of software. The Apple Fax Application Program features multiple file transmission; keeps distribution lists, address books and activity reports; and allows users to receive fax transmissions without supervision. The Apple Fax Resource, activated through the Chooser and a fax icon that asks for the phone number of the receiving fax machine, acts very much like a standard printer resource.

In that function, the Apple FaxModem expands the parameters of the traditional capabilities of the Mac. "In effect, it treats any fax machine in the world as a remote printer from your Mac," said Robertson. "You're printing from the Mac through a modem to one of those 2 million fax machines anywhere in the world." ■

PROJECTED SALES OF FAX UNITS



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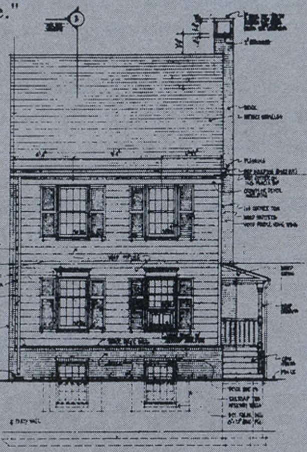

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Adobe's silver fortunes may have a cloudy lining

BY CLAIR WHITMER
MacWEEK Staff

MOUNTAIN VIEW, Calif. — The first half of 1987 has been packed with good news for Adobe Systems Inc., the provider of the reigning page-description language, PostScript.

The release of Adobe's first end-user product, Illustrator, and announcements of PostScript support from a series of major players made trade paper headlines, and second-quarter results showed net income increased 129 percent over last year for the Mountain View, Calif., company.

But 1987 also brought a series of potential threats to Adobe, including the partial development of at least a dozen PostScript clones, printer price drops and speculation that the relationship between Apple and Adobe has soured.

John Warnock and Charles Geschke developed PostScript at the Xerox Research Center in Palo Alto, Calif. They left in 1982 to found Adobe after Xerox decided not to license its own page-description language (PDL), Interpress, which Warnock also is credited with inventing. "At first, we wanted to do a franchise printing business, much like Krishna Copy. But a year later we signed with Apple," said Executive Vice President Geschke. It was then that PostScript started on the road to becoming the de facto standard that it is today.

A PDL is a way of defining the appearance of a printed page, including text, halftone and bit-mapped images. PostScript is a device-independent language that describes pages through mathematical formulas representing the outlines of entire shapes, including typefaces, and then filling them in.

Adobe's principal source of income is an interface board containing the PostScript interpreter that it sells to printer manufacturers. The language itself is in the public domain, placed there with the hope that its accessibility for software developers would make it a standard.

It worked. The language is now supported by more than 19 different output devices, every major word-processing and page-layout program and most graphics programs. Adobe's customer list reads like a who's who of the computer and typesetting industry, including Apple, Qume, Apollo Computer, Digital Equipment Corp., NEC, Linotronic, QMS, Texas Instruments, AST Research and IBM.

PostScript has been more than a technical success. Through licensing its product to these companies, Adobe has made a bundle. This year Business Week listed the company as number 38 of the top 100 "Hot Growth Companies," with an average earning growth over the past three years of 686 percent.

The results of Adobe's 1987 second quarter showed a revenue of almost $8.7 million and a net income of nearly $2 million, a 129 percent increase from last year. Of that revenue, PostScript royalties accounted for $5.4 million, almost double the amount it brought in the second quarter of 1986.

The revenue from what Adobe calls "support products," including Illustrator; typeface software; manuals; and TranScript, the UNIX equivalent of PostScript, added up to $2.7 million this quarter. Last year's second quarter revenue was $302,000 from support products.

Although the first two quarters have been unquestionably successful, this year also brought some large challenges for Adobe, primarily the drop in laser printer prices and the imminent release of more than one PostScript clone. A PostScript printer expected in September from AST Research of Irvine, Calif., will sell for $3,995. This month General Computer of Cambridge, Mass., announced a $2,500

See ADOBE, Page 10

Adobe Systems Inc.
1585 Charleston Road
Mountain View, Calif.
(415) 852-0271
Founded: 1982
Employees: 140
Product line: PostScript interpreter boards, Illustrator, Adobe Typeface Packages, TransScript
Revenues from licensing of PostScript interpreter for first six months of 1987: $11.03 million

Revenue
First six months of 1986: $5.89 million
First six months of 1987: $15.58 million

Net Income
End of second quarter 1986: $868,000
First six months of 1987: $1.99 million

Earnings per common share
End of second quarter 1986: 10 cents
End of second quarter 1987: 19 cents

Largest shareholder as of end of second quarter 1987: Apple Computer with 16.85%.

Adobe Systems' Kevin Wandryck, product marketing manager, and John Kunze, product manager.

STEVEN MANGOLD

Developers level criticism at Apple's pricing policies

BY HENRY NORR
MacWEEK Staff

BOSTON — Software developers meeting at the Mac Expo two weeks ago challenged Apple's pricing policies, compared notes on royalty agreements and argued about the proper machine for their future programs.

"Apple is doing all of us a tremendous disservice," said Heidi Roizen, president of T/Maker Co., "by doing nothing to create a low-end market for the Mac."

Roizen, whose Mountain View, Calif., company distributes WriteNow and several clip-art collections, woke up a previously low-key seminar with a forceful argument that Apple has failed to take full advantage of the Mac's ease of use by not providing an entry-level model priced low enough to compete with PC clones. Declaring that T/Maker "definitely" expects to develop for forthcoming PC-based operating systems, Roizen said that a small business could equip six people with MS-DOS computers and a laser printer for about $5,000 — roughly one-third the cost of a similarly equipped Mac office.

"I think this is a good topic," said Randy Battat, Apple's director of developer services. "We think about it all the time." But Battat refused to discuss plans to address the issue. He said Apple would not get into a price war that would sap its ability to fund innovation.

Battat also responded to fears that Apple might retaliate against developers who bring out IBM-based versions of their software. "Let me say that we're out to get incredibly great software for the Mac, and going after our developers wouldn't be the way to do it."

The developers also complained about the instability of Mac system software. Andrew Singer, vice president of Lexington, Mass.-based Think Technologies, said his company's policy of providing free upgrades to keep its products compatible with changing ROMs and system releases had taken a toll on its financial situation. ■

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ADOBE

Continued from Page 9

printer. And, according to David Schechter of Boston's Homans, McGraw, Trull, Valeo and Co., there will be announcements of $1,500 printers by the November COMDEX show.

In the face of such precipitous price drops, Apple will have to restructure its prices for the LaserWriter, said analyst Bruce Lupatkin of Hambrecht & Quist in San Francisco.

All of this means lower royalties for Adobe. Adobe presently earns about $250 on a $5,000 list price printer, Schechter said. "The company is on the knife edge. It's being attacked strategically by PostScript clones and finds itself in a world where printer prices are going down rapidly," he said.

There also are reports that the relationship between Adobe and Apple is rockier than it once was. Shortly after the March announcement of IBM support for PostScript, Apple's senior vice president, Albert Eisenstat, resigned from Adobe's board of directors.

The resignation coincided with reports from sources close to the company that Apple is developing an advanced version of its QuickDraw internal graphics routine. This would mean the eventual release of a non-PostScript laser printer from Apple.

The official response from Adobe is that if such a printer were developed, it would not be a substitute for the LaserWriter. Adobe's national sales manager, Clint Nagy, said the QuickDraw printer "is wanted by [Jean-Louis] Gassee; he's the one who's encouraged it. But it won't have any of the functionality of PostScript-based printers."

Geschke vehemently denied any charge that Apple is seeking autonomy from his company. "They're not interested in proprietary strategies. Anyone who says they are is just wrong."

But there is some evidence that Adobe might be trying to decrease its dependence on Apple. Last quarter, royalties from Apple accounted for 55 percent of Adobe's revenue. In 1986, however, that figure was 80 percent.

Adobe is growing so quickly into other areas and signing so many new companies that "Apple could go away next year and it won't make a huge difference to Adobe," Lupatkin said.

Schechter, a less enthusiastic analyst of Adobe's future, acknowledged that most projections foresee a 23-percent net margin for Adobe in 1987. Yet he said he doubts that the company can keep up its present growth rate.

"They enjoy an unusual success in business in general and in software companies specifically. But these profit levels are considered to be unsustainable. PostScript has become a standard, but very early in the evolution of the printer business," he said.

If PostScript royalty rates drop, Adobe will have to make up the difference in sales volume. This may become more difficult if alternatives are released by the clone companies.

But Adobe's Nagy said: "It was always anticipated that there would be clones. After all, the language is in the public domain. But our long-term sales projections are very bullish."

"Fonts are a big part of the strategy," said Product Manager John Kunz, referring to one of the fundamental marketing hurdles for clone-developers: the lack of their own licensed fonts. If Adobe manages to monopolize the licensed fonts available, a user may end up with a perfectly functional non-PostScript printer but without the standard fonts to print with. To guarantee it is no longer dependent exclusively on PostScript, Adobe introduced its application software, Illustrator.

"We wanted to support PostScript's success in the marketplace and give Adobe another leg to stand on. So we targeted a hole in the market and developed for it," said Fred Mitchell, Adobe's director of support products.

Illustrator is a resolution- and device-independent drawing program that provides tools to manipulate PostScript files. Although the program has garnered mostly rave reviews, some analysts question whether a truly sizable market for such a high-end product exists outside professional graphic arts circles.

"Illustrator is a serious product and it sells for a serious price," said Schechter. "It requires the user to be an artist to begin with, and it's incredibly time consuming. Maybe the advertising they're putting out geared to the general personal computer user is a mistake."

Adobe employees, however, defend the program as part of an entire graphics solution applicable to everyone's needs.

Other Adobe plans include versions of Illustrator for other platforms, most probably for the IBM PC. Although the company is predictably cagey about other future projects, Adobe Product Marketing Manager Kevin Wandryck said, "The plan is to continue finding holes in the market and filling them." ■

We dare you to compare

Creative Strategies' survey data of MacWEEK readers with any other Macintosh magazine:

100% use word processing software
84% use spreadsheets
82% use hard disk drives
76% use a Macintosh Plus or SE
72% use desktop publishing programs
69% have PCs in their workgroups
67% are connected to local area networks

MacWEEK reaches power buyers.

MacWEEK

Focus: Computer-aided design

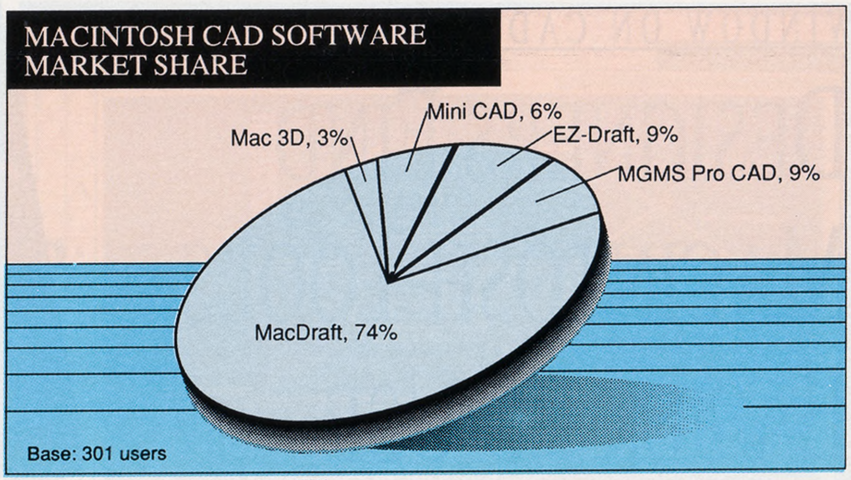
BY BILL LANGENES
Creative Strategies Research

Eleven percent of Macintosh systems are used with special-purpose computer-aided design (CAD) programs for engineering, architectural and other applications, according to a telephone survey. Another 68 percent are used with general-purpose drawing and painting programs and 21 percent are not used with any such programs.

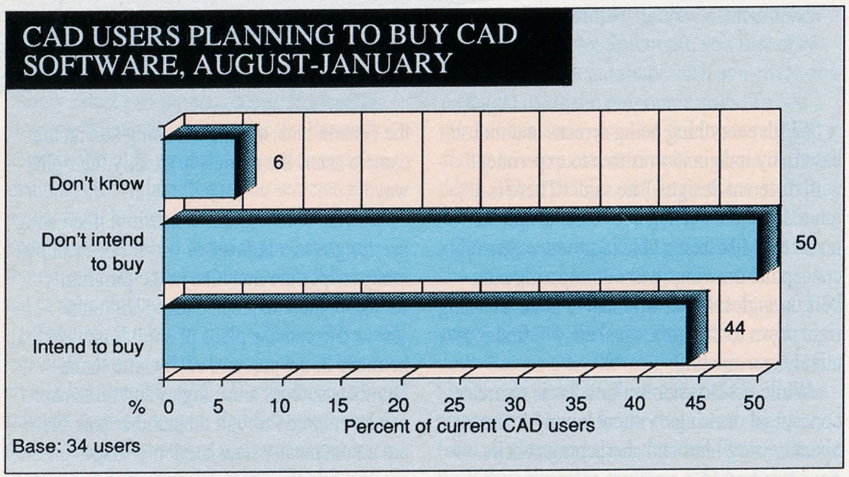
These findings are among the results of a July survey of 301 Macintosh users in volume Macintosh sites conducted for MacWEEK by Creative Strategies Research.

Among CAD software users, MacDraft has a dominating 74 percent market share. This $239 product from Innovative Data Design of Concord, Calif., leads EZ Draft from Bridgeport Machines of Bridgeport, Conn., and MGMS Professional CAD from Micro CAD/CAM of Van Nuys, Calif., each holding a 9 percent market share. Six percent of respondents said they use MiniCAD from Diehl GraphSoft of Elliot City, Md., and 3 percent said they use Mac3D from Challenger Software of Homewood, Ill.

The draw/paint programs were led in popularity by MacDraw, SuperPaint and MacPaint.



Source: June 1987 Creative Strategies/MacWEEK



Source: June 1987 Creative Strategies/MacWEEK

About one-third will buy CAD software

Survey results indicate current CAD program users will be active buyers of more CAD software in the last six months of the year. Forty-four percent of these users said they intend to purchase another CAD software package during the August-January period. While 6 percent did not know their buying plans, one-half said they did not intend to purchase CAD software in the last half of the year.

Of the 301 Macintosh users surveyed, about one-third intend to buy CAD software soon. Users of draw/paint programs, however, appear satisfied with their general-purpose applications since only 15 percent said they intend to buy a CAD program in the last six months of 1987.

Mail order companies are the preferred source of software among Macintosh users surveyed who intend to purchase a CAD program. Forty-five percent said they buy most of their software from mail order, while 36 percent specified retail computer outlets, 10 percent mentioned wholesalers, 3 percent said manufacturers and 1 percent listed other sources.

The MarketWEEK survey is conducted exclusively for MacWEEK by Creative Strategies Research, a high-technology research and consulting firm based in Santa Clara, Calif. For this survey, U.S. corporate and other volume users were randomly selected from the MacWEEK subscriber database and surveyed by telephone during July. A total of 308 respondents were reached; 301 agreed to take part in the survey.

CALENDAR

AUGUST

31 — **Building Strategic Advantage Through Computing** (Chicago)
One-day seminar addresses the challenges faced by information systems executives and the business strategies behind information technologies. Contact: Digital Consulting Inc. at (617) 470-3880.

SEPTEMBER

3-5 — **American Institute of Graphic Arts National Conference** (San Francisco)
Aimed at graphic artists, the conference will include sessions on technologies, history and educational aspects of the graphic arts industry. Includes film, slides and graphic art exhibits. Contact: AIGA at (212) 752-0816.

5 — **Suite 3D's Graphic Art Exhibition** (San Francisco)
In conjunction with the AIGA conference listed above, the exhibition will feature the work of West Coast designers. Includes reception and hands-on demonstrations. Contact: Barbara Mehlman at (415) 882-7063.

9-12 — **The Seybold Desktop Publishing Conference** (Santa Clara, Calif.)
This year's largest desktop-publishing conference, attended by 150 companies, will include seminars, exhibits and speeches by Paul Brainerd of Aldus, John Sculley of Apple Computer and John Warnock of Adobe Systems, among others. (Also Michael Tchong, publisher of MacWEEK.) Contact: The Seybold Group at (213) 457-5850.

14-18 — **Electronic Printer and Publishing Conference** (Miami)
Sponsored by CAP International, the schedule includes the electronic printer conference and the computer publishing systems conference back-to-back. Features product exhibits and panel discussions on new technology and marketing issues. Contact: CAP International at (617) 837-1341.

21-22 — **Datapro's Electonic Publishing: Strategies, Applications and Systems** (New York)
Two-day course aimed at corporate users on how to apply electronic publishing while boosting productivity and cutting costs. Contact: Datapro at (800) DATA-PRO.

21-23 — **CASES Computer-Aided Software Engineering Symposium** (Boston)
Conducted by Digital Consulting Inc., the conference will include a one-day review of the technology trends, characteristics, components and environment, as well as two days of presentations from developers of CASE products. Subjects addressed will include the human factor, design automation and artificial intelligence. Contact: Digital Consulting Inc. at (617) 470-3880.

23-24 — **Ottawa Computer Office Technology Show** (Ottawa, Canada)
More than 60 exhibitors will show products covering the range of microcomputer and peripherals technology aimed at the business user. Hands-on demonstrations and seminars, with a focus on desktop publishing. Contact: Fred West at (416) 252-7791.

29-Oct. 2 — **INFO '87** (New York)
The Information Management Exposition and Conference, with the theme of "Making Existing Information Systems More Productive," features three "focus" days: financial service companies, manufacturing companies, government agencies and departments. Conference also includes workshops, full-day courses and 48 sessions. Contact: INFO '87 at (203) 964-8287.

30-Oct. 2 — **Apple Expo** (Paris)
This trade show will feature Apple Computer France and associated third-party developers. Roughly 70 exhibitors and 30,000 participants expected. Contact: Jean-Claude Muratore at Apple Computer France (1) 69.28.01.39.

OCTOBER

2-4 — **Apple Business Users Conference** (Chicago)
Focusing on getting the most value from use of Apple computer systems in business environments, the conference will include 45 seminars. Subjects covered include software selection, software usage, IRS issues and system set-up and conversion. Technical sessions will also be offered. Contact: Phase III at (312) 653-7640.

4-6 — **1987 Small Business DataTrack Service Conference** (New York)
Sponsored by CAP International, the conference is designed to help vendors reach sales goals by capitalizing on the small-business market. Topics include distribution strategies, service and training, advertising and product design. Contact: Jean O'Toole at CAP International at (617) 834-6832.

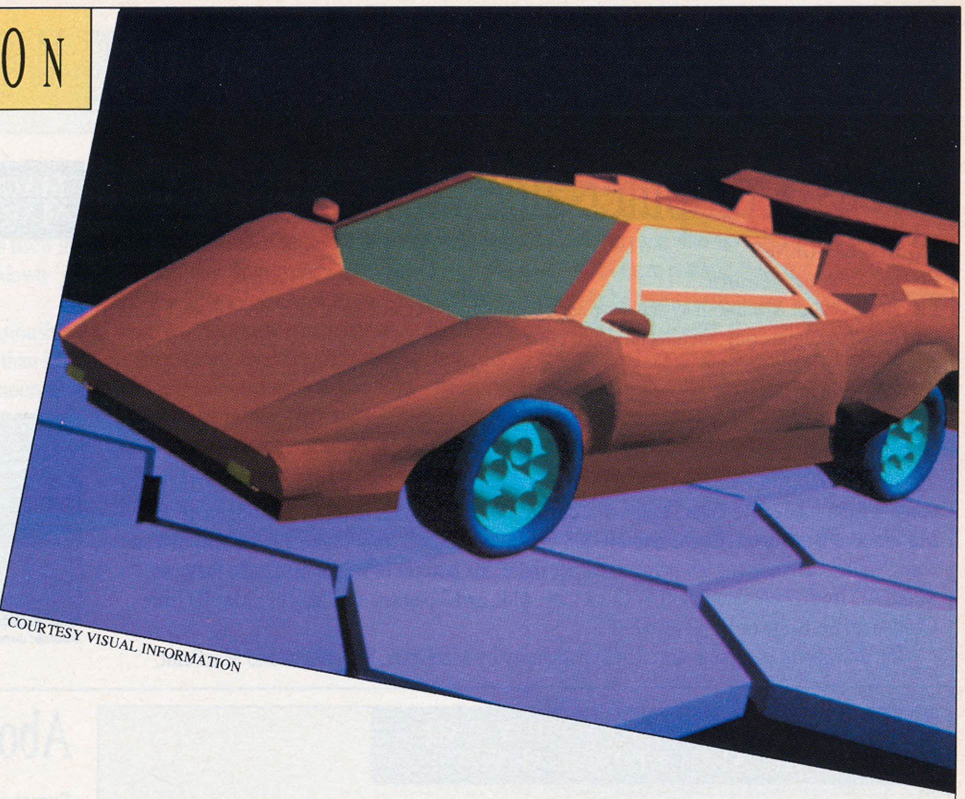
4-8 — **ASIS 50th Annniversary Conference** (Boston)
This conference of the American Society for Information Science will include nearly 100 exhibitors, focusing on products, samples and demonstrations of suppliers to the information field. The keynote address will discuss "Information: The Transformation of Society." The conference will also include a preview of the Smithsonian Institution's exhibit, "The Information Revolution." Contact: ASIS at (202) 462-1000.

5-6 — **Datapro's Electonic Publishing: Strategies, Applications and Systems** (Los Angeles)
See listing for Sept. 21-22.

Send calendar events to: Clair Whitmer, MacWEEK Calendar, 525 Brannan St., San Francisco, Calif. 94107.

WINDOW ON CAD/CAM

DESIGNERS FIND MACINTOSH TOOLS EASIER TO USE



COURTESY VISUAL INFORMATION

BY LAWRENCE STEVENS
Special to MacWEEK

Joe Lewis is a special-effects design engineer now working with the Pee Wee's Playhouse in Hollywood. He creates those shots of spaceships passing by stars and planets and monsters destroying towns. TV viewers have become sophisticated over the years, and they expect special effects to look realistic. And that's what keeps Lewis, a sculptor by training, in business.

Said Lewis: "It's a very exacting process, a very specialized field. Everything has to be built to exact scale, and every model may have a dozen or more moving parts, all of which have to be synchronized perfectly."

Recently, Lewis discovered a product that is making his life much easier. It's MGMStation, a computer-aided design (CAD) system by Micro CAD/CAM Inc. of Van Nuys, Calif., for his Macintosh Plus.

CAD has been available for personal computers for four years, and many would have thought that people like Lewis — those in high-tech, well-financed businesses — would have been among the first to make use of it.

But not so, said Lewis.

"Most of the people around the film industry come from artistic backgrounds: writers, artists, sculptors, musicians. We're not computer-literate, and the arcane language that is required to use an IBM PC is about as foreign to us as Greek. And most of us have schedules too busy to begin learning Greek," he said.

For that reason, Lewis and many of his colleagues refrained from purchasing micro-based CAD systems such as AutoCAD and VersaCAD, both of which run on the IBM PC.

"I have worked with AutoCAD for a while. But the commands were so difficult, I found myself turning off the machine and reaching for my paper and pencil," Lewis said.

Within the last year or so, many new CAD products have become available for the Macintosh. And now designers who had thought CAD too complicated are finding that Macintosh user interfaces are bringing the technology within their reach.

John Eide, a Chappaqua, N.Y., architect who uses MiniCad by Diehl Graphsoft of Ellicott, Md., said the Mac also allows for less-structured drawing than the PC.

"With everything being screen- and mouse-based, my imagination is free to experiment with different designs," he said. "There is a more direct connection between me and the machine. I like being able to produce general conceptual drawings without imputing numbers or angles. If I always had to get everything right down to the cat's whiskers, I'd find it creatively constipating."

While CAD systems allow a user to create conceptual drawings without having to worry about erasing lines and sharpening pencils, so does standard Mac graphics software such as MacPaint, MacDraw and MacDraft. The real power of CAD software is seen when creating precision designs in such fields as machine tool design, architecture and engineering.

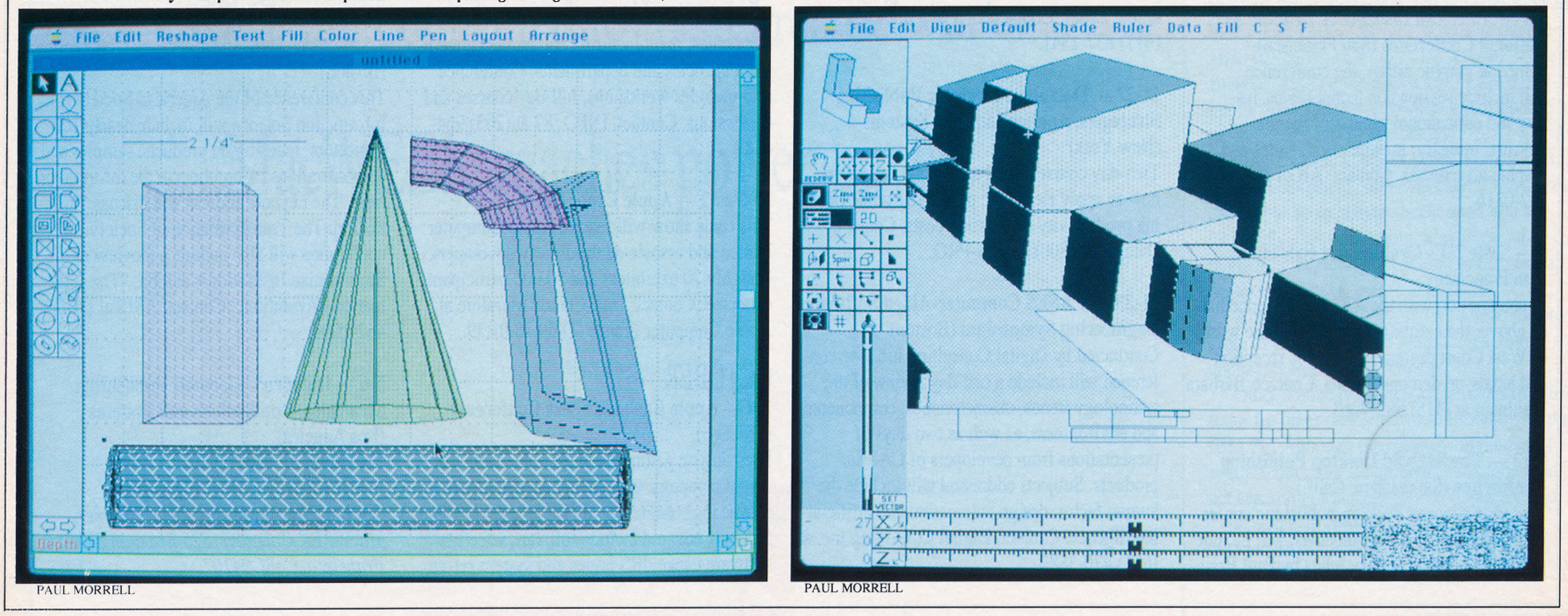
Lewis is a prime example of a person who needs the ability to create precision drawings. Often he has to create multiple models that may be exactly the same except for a few small features, and the moving parts must be synchronized exactly. He said: "Even a five-second shot of a spaceship may require dozens of drawings to create the model. Plus, I normally have to design the devices that control the camera lens, angle and timing so that the camera scans the models in exactly the right way."

Lewis' CAD system assists him in creating his designs in a number of ways. For example, many shapes are included in the program's database; these can be "clicked" onto the screen. He can use plans of similar models that he made in the past and easily alter them. Numbers such as area, angles and dimensions can be entered through the number pad; these are automatically translated into shapes on the screen. And the program catches certain errors in design.

The difference is flexibility

CAD software differs from drawing packages in its greater flexibility to do such things as dimension objects interactively, rotate objects in space, create user-defined grids on two or three axes, create multiple layers and store larger libraries of often-used shapes. These powerful functions have traditionally required two to three weeks of training to master. But the growing acceptance of the Macintosh in architectural and engineering firms for creating

MiniCAD has a library of 36 predefined 3-D shapes and allows exporting of designs to MacDraw, MacDraft and MacPaint. Mac-based 3-D products are easier to use than traditional micro- and mini-based systems.


File Edit Reshape Text Fill Color Line Pen Layout Arrange
untitled
2 1/4"
Depth
File Edit View Default Shade Ruler Data Fill C S F
2D
X
Y
Z

PAUL MORRELL PAUL MORRELL

simple drawings using MacPaint or MacDraw has created a cadre of people who are "Macintosh-literate."

These users find it a small step to go from MacDraw to a Mac-based CAD system. And that makes training easier. Said Bob Robertson, a New York architect who now uses SpaceEdit by Advent of Beverly Hills, Calif.: "I started off using MacDraw for my conceptual drawings. After I got comfortable using a computer rather than pencil and paper, I was able to move up to a CAD system without much trouble." Robertson said that he was able to use SpaceEdit fairly comfortably after only eight hours of training.

It is relatively easy to be trained to use these complicated functions because the Macintosh user interface makes many aspects of CAD programs almost intuitive. For example, with MGMStation, dimensioning can almost be figured out without referring to the manual. If you want to draw, say, a horizontal line, you simply select two points, choose Horizontal from the Dimension menu, and the line will appear. The only reason you would need the manual is to explain that if you selected the points from left to right, the arrow will appear between the points but that if you selected them from right to left, the arrow will be external to the points.

The time it takes to train someone becomes especially important to a company that has to choose between hiring CAD experts or lower-salaried drafting people. Ted Schooley, president of CompServeCo, a software distribution company in Los Angeles, said: "The typical scenario is that a boss will hire a drafting person and train him on a CAD system for a few months. But then he is a CAD expert and can demand a higher salary, or he can go elsewhere to get a higher salary. But since it only takes a few days to train someone on a Macintosh CAD system, it is a lot easier and cheaper to replace people."

During the transition period, when a user may be graduating from a Mac drawing program to a CAD system, many want to use both.

Some CAD software allows file transfers between some drawing and CAD programs. For example, MiniCAD allows the exporting of designs to MacDraw or MacDraft and MacPaint and the importing of all files, except bit maps, through the Clipboard.

Entering the third dimension

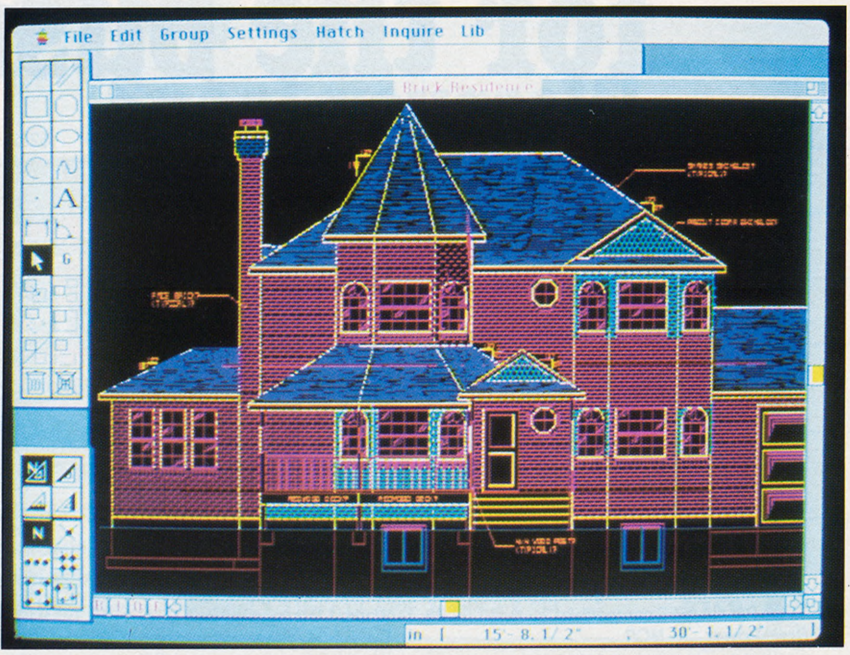
The real power of CAD systems can be seen in 3-D drawing, a branch of CAD which is not required by all users. 3-D-based CAD programs provide the ability to create and portray on the screen a third dimension through a number of different schemes. 3-D drawing is less intuitive than 2-D CAD. And even experienced draftsmen will require at least three or four days' training before they can use it comfortably.

But Mac-based 3-D products are still much easier than traditional micro- and mini-based systems. For example, to draw a three-dimensional object using SpaceEdit, you first draw the two-dimensional shape such as a circle or a rectangle using the program's tools. To add a third dimension, you click the Prism tool and a dialog box requests information about the depth. When that is completed, the screen displays four windows: top view, side view, front view and axonometric (a flattened view that shows three sides of an object).

MiniCad provides a better rendering of 3-D graphics, but it also is more difficult to produce. Rather than showing different views of the item to simulate three dimensions, you see an actual 3-D wire frame that can be viewed from all sides and shaded with different fills; the light source can be altered to show different shadows. You can even take a "walk" though the inside of a design, such as a building, viewing it from all angles.

With MiniCAD you also begin by entering a two-dimensional drawing, but you do it in the three-dimensional section of the program, which is slightly more complicated. You then have to go through a number of Toolbox steps, depending on the object. MiniCad calculates the object, which can take up to 1 minute, and finally the object is drawn. MiniCad also has a library of 36 predefined 3-D shapes.

See CAD, Page 21

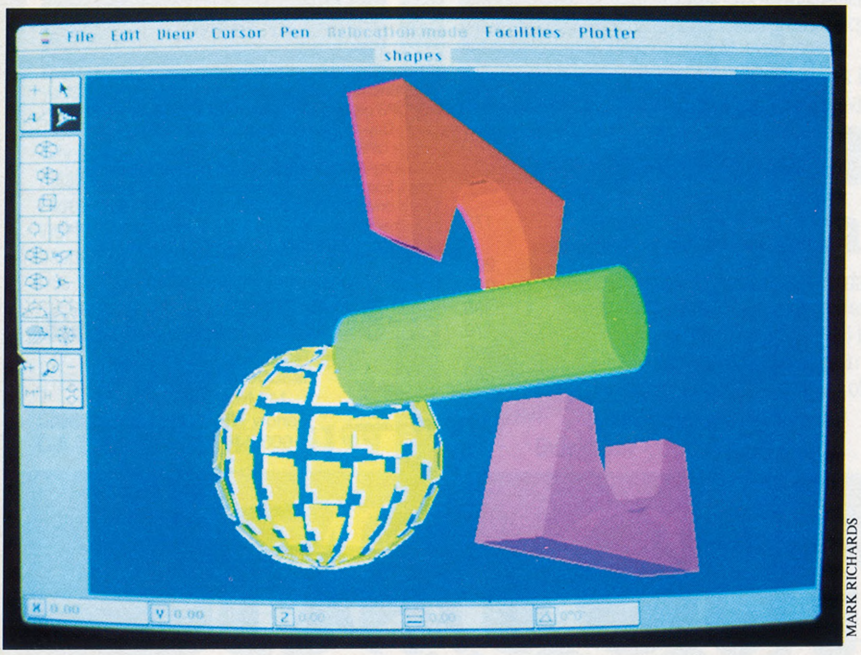


COURTESY VERSACAD

Many users have found CAD/CAD programs like VersaCAD easier to use on a Mac than on a IBM PC.

COURTESY VISUAL INFORMATION

Dimension, from Visual Information Inc., has two parts, design and solid.



MARK RICHARDS

Architect Bob Robertson said he could use SpaceEdit after only eight hours of training.

Macintosh may be catching up with IBM

Since the early days of micro-based CAD systems, the IBM PC and its compatibles were the machines of choice. But while there is no hard evidence, many experts speculate that the Macintosh may be closing in on Big Blue's commanding lead.

Mike Seeley, an analyst at Dataquest of San Jose, Calif., said: "We've been getting a number of requests for tracking the Macintosh-based CAD systems. There's obviously a growing interest since many look at the Macintosh as the obvious machine for graphical technology like CAD."

Seeley said although the PC already has a large base of users, the number of people buying CAD systems is increasing dramatically every year. And there is plenty of room for new Macintosh-based products to make important inroads. He said in 1984, only 11,700 micro-based CAD units were shipped. But in 1986, 30,400 units were shipped, and in 1987, Dataquest estimates 52,300 units will be shipped.

The acceptance also is being seen in shows where CAD is an important feature. For example, last June Apple had its first exhibit at the A/E/C (Architect, Engineer and Construction) System Show in Washington. Ted Schooley, president of CompServeCo, a software distributor in Los Angeles, said, "For the first time that I can remember, there was real respect for Apple products as a tool for design professions."

One thing that may be adding to Apple's credibility is the introduction of the Macintosh II. Avi Lipsky, developer of MGMStation, said: "The Macintosh II can stand up to a comparison list of any graphics workstation. It's almost impossible for an engineer to ignore it when considering purchase of hardware. Then once he is thinking about Macintosh, he might decide that a Macintosh Plus will be enough for him."

See CATCHING UP, Page 21

Hardware and software for the business Mac.

SOFTWARE

NCP denotes not copy-protected.
CP denotes copy-protected.

Aegis Development ... NCP	
Doug Clapp's Word Tools	$42.
Affinity Microsystems ... NCP	
Tempo *(power user's macro utility)*	55.
ALSoft ... NCP	
DiskExpress *(maximize disk performance)*	27.
Altsys ... NCP	
FONTastic Plus *(advanced font editor)*	49.
Fontographer *(Laserwriter font editor)*	245.
Ann Arbor ... NCP	
FullPaint *(advanced Paint program)*	53.
Berkeley System Design ... NCP	
Stepping Out *(requires 512k)*	59.
Blyth ... CP	
Omnis 3 Plus *(multi-user available)*	call
Borland International ... NCP	
Sidekick 2.0	59.
Reflex *(information management analysis)*	59.
Turbo Pascal *(HFS compatible)*	59.
BrainPower ... NCP	
Graphidex *(DA graphics organizer)*	69.
Designscope *(electronic circuit design)*	129.
StatView 512+ *(req. external drive, 512k)*	179.
Bravo Technologies ... NCP	
MacCalc *(easy to use spreadsheet)*	79.
CasadyWare ... NCP	
Fluent Fonts *(two-disk set)*	29.
Fluent Laser Fonts *(Vols. 1-15)*	*each* 48.
Central Point Software ... NCP	
Copy II Mac *(includes MacTools)*	20.
Challenger Software ... NCP	
Mac3D *(3D graphics, CAD features)*	119.
Chang Labs ... NCP	
Rags to Riches Ledger or Payables	125.
Rags to Riches Receivables *(req. 512k)*	125.
The C.A.T. *(Contacts, Activities, Time)*	199.
Inventory Control	243.
Professional Billing	243.
Cortland ... NCP	
TopDesk 2.1 *(7 new desk accessories)*	34.
Cricket Software ... NCP	
Statworks *(statistical package)*	77.
Cricket Graph *(multiple windows)*	127.
Cricket Draw *(advanced draw capabilities)*	177.
Data Tailor ... NCP	
Trapeze *(spreadsheet, reqs. 512k)*	173.
DataViz ... NCP	
MacLink Plus *(transfer Mac/IBM data)*	159.
Digital, etc. ... NCP	
Turbo Maccountant *(GL,AP,AR,Payroll)*	262.
Dow Jones ... CP	
Market Manager Plus 1.5	159.
Dubl-Click Software ... NCP	
World-Class Fonts! *(both Volumes)*	49.
WetPaint Clip Art *(both Volumes)*	49.
Enabling Technologies ... NCP	
Easy3D *(create solid 3D objects)*	89.
Pro 3D *(3D shaded modeling)*	199.
Forethought ... NCP	
FileMaker Plus *(feature-packed database)*	159.
PowerPoint *(professional presentations)*	249.
FWB Software ... NCP	
Hard Disk Backup *(protect hard disk info)*	38.
Hard Disk Partition *(speeds up hard disk)*	38.
Hard Disk Util *(program backup)*	56.
Ideaform ... NCP	
MacLabeler *(print disk labels)*	29.
DiskQuick *(catalog floppies & hard drives)*	29.
Imagine ... NCP	
Smart Alarms *(DA reminder system)*	38.
Industrial Computations ... NCP	
Powermath *(equation solving tool)*	59.
Infosphere ... CP	
LaserServe *(LaserWriter spooler)*	65.
MacServe *(AppleTalk software)*	175.
Innovative Data Design ... NCP	
MacDraft *(new updated version, 512k)*	159.
LaserWare ... CP	
LaserWorks *(requires 512k, Laserwriter)*	$229.
LaserPaint *(requires Mac Plus, Laserwriter)*	375.
Legisoft/Nolo Press ... NCP	
WillWriter 2.0 *(prepare your own will)*	31.
Letraset ... NCP	
Ready,Set,Go!3	249.
Linguist's Software ... NCP	
Tech *(1000 different symbols)*	59.
Foreign language fonts	call
Living Videotext ... NCP	
More *(outlines, windows, & tree charts)*	158.
Lundeen & Associates ... NCP	.
WorksPlus Spell	39.
Micro Analyst ... NCP	
Mac Zap *(recover crashed hard disks)*	36.
Microsoft	
Basic Interpreter 3.0 *(NCP)*	64.
Chart 1.02 *(42 chart styles, CP)*	72.
Multiplan 1.1 *(63 col. by 255 rows, CP)*	105.
File 1.05 *(flexible data manager, NCP)*	111.
Basic Compiler 1.0 *(NCP)*	119.
Fortran 2.2 *(compiler, NCP)*	169.
Works 1.0 *(integrated tool, NCP)*	189.
Excel 1.04 *(power spreadsheet, NCP)*	224.
Word 3.0 *(word processor, NCP)*	239.
Mindscape ... CP	
GraphicWorks 1.1 *(newsletters, posters)*	48.
Monogram ... NCP	
Dollars & Sense *(home, small business)*	81.
Odesta ... NCP	
Double Helix *(relational, custom menus)*	275.
Multi-User Helix *(requires 512k)*	439.
OWL International ... NCP	
Guide *(hypertext, free-form info)*	79.
Guide Envelope System	109.
Palantir ... NCP	
inTalk *(communication to emulation)*	99.
PBI Software ... NCP	
HFS Locater *(DA organizer for HFS)*	26.
HD Backup *(supports MFS, HFS)*	29.
Personal Computer Peripherals ... NCP	
HFS Backup	32.
ProVUE Development ... NCP	
OverVUE 2.0 *(power-packed database)*	149.
Satori ... NCP	
BulkMailer *(mailing lists)*	74.
BulkMailer Plus *(up to 90,000 names)*	225.
Legal Billing *(attorneys to accountants)*	385.
Legal Billing II *(full trust accounting)*	575.
Project Billing *(architects to engineers)*	445.
Silicon Beach Software ... NCP	
Silicon Press *(printer utility, 512k)*	41.
SuperPaint *(advanced graphics program)*	54.
Software Discoveries ... NCP	
Record Holder Plus *(data manager)*	45.
Software Ventures ... NCP	
Microphone 1.1 *(includes Glue™)*	119.
Solutions, Inc. ... NCP	
SmartScrap & The Clipper	41.
Glue *(creates "print to disk" capability)*	41.
State of the Art ... CP	
Electric Checkbook *(print checks)*	28.
SuperMac Technology ... NCP	
SuperSpool 3.4	49.
Diskfit *(backup & restore utility)*	49.
SuperLaserSpool	99.
Multi-User SuperLaserSpool	259.
Survivor Software ... NCP	
MacMoney *(financial planner)*	42.
Symmetry ... NCP	
Acta 1.2 *(outline/writing desk accessory)*	38.
PictureBase *(clip art manager, 512k)*	42.
T/Maker ... NCP	
ClickArt Personal Graphics, Effects, Publications, Letters Vol. 1 or 2, Holidays, Business Image	*each* 28.
Bombay, Plymouth, or Seville Laser font	46.
Write Now *(word processor)*	102.
Think Technologies ... NCP	
Laserspeed *(Laserwriter utility)*	65.
Lightspeed Pascal *(includes debugger)*	85.
Lightspeed C *(top-rated C Compiler)*	$125.
InBox Starter Kit *(CP)*	235.
InBox Personal Connection *(Mac & PC)*	call
TML Systems ... NCP	
TML Source Code Library	58.
TML Pascal *(compiler, req. 512k)*	68.
TrueBasic ... NCP	
True BASIC *(ask about special)*	59.
Algebra 1 or II, Pre-calculus, Trigonometry, 3D Graphics, Discrete Math, Probability, Chippendale utilities & Calculus	*each* 35.
TrueSTAT *(statistics)*	58.
Runtime *(create stand-alone applications)*	59.
William & Macias ... NCP	
myDiskLabeler *(design & print labels)*	24.
myDiskLabeler w/Color *(req. Imagewriter II)*	33.
myDiskLabeler w/Laserwriter option	38.
Working Software ... NCP	
Spellswell *(spelling checker)*	45.

HARDWARE

Manufacturer's minimum limited warranty period is listed after each company name. Some products in their line may have longer warranty periods.

Note: Some hardware items are available in either platinum or beige color. Please specify.

20 Megabyte SCSI Hard Drive	569.
AST Research ... 2 years	
AST Turboscan *(300 dpi scanner)*	1479.
AST 2000 *(20 MB, 20 MB tape)*	1479.
AST 4000 *(74 MB, 60 MB tape)*	3895.
Curtis Manufacturing ... lifetime	
Diamond *(6 outlets)*	29.
Emerald *(6 outlets; 6 ft cord)*	36.
Sapphire *(3 outlets; EMI/RFI filtered)*	47.
Ruby *(6 outlets; EMI/RFI filtered; 6 ft cord)*	55.
Dove Computer ... 90 days	
MacSnap Memory Upgrades	call
Ergotron ... 1 year	
Mouse Cleaner 360°	15.
MacTilt or MacTilt SE	74.
MacBuffer 512k	329.
MacBuffer 1024k	429.
Farallon Computing ... 1 year	
PhoneNET PLUS *(DB-9 or DIN-8)*	39.
Hayes ... 2 years	
Smartcom II *(communications software)*	88.
Smartmodem 1200	299.
Smartmodem 2400	449.
InterBridge *(connect Appletalk networks)*	659.
IOMEGA ... 90 days	
Bernoulli Box *(dual 20 MB w/SCSI)*	1879.
Bernoulli Box *(dual 10 MB, Appletalk)*	call
Kensington ... 1 year	
Appletalk Cable Clips or Connectors	*each* 1.
Mouse Cleaning Kit w/Mouse Pocket	17.
Disk Drive Cleaning Kit	20.
Tilt/Swivel	22.
Universal Copy Stand	24.
Polarizing Filter or Surge Suppressor	34.
System Saver Mac or Control Center	64.
A-B Box *(for the Mac Plus)*	64.
Turbo Mouse	85.
Koala Technologies ... 90 days	
MacVision *(digitizer)*	175.
Kraft ... 1 year	
3 Button Quickstick	39.
Migent ... 1 year	
Pocket Modem *(ext. 1200 baud)*	175.
Mirror Technologies ... 1 year	
Magnum 800 External Drive	209.
Magnum 20 Tape Backup	899.
MagNet 40/40 *(40MB, 40MB tape)*	2395.
MagNet 20x *(w/cable)*	779.
MagNet 30x *(w/cable)*	949.
MagNet 40x *(w/cable)*	1299.
MagNet 85x *(w/40MB tape)*	3995.
Nutmeg Systems ... 1 year	
Nutmeg 19″ Monitor	1579.
Personal Computer Peripherals ... 1 year	
MacBottom HD 21MB *(SCSI)*	$859.
MacBottom HD 21MB *(SCSI)* with modem	999.
MacBottom HD 45MB *(SCSI)*	1285.
Summagraphics ... 90 days	
MacTablet 12″ x 12″ *(sketching)*	379.
Systems Control ... 2 years	
MacGard *(surge protection)*	55.
Thunderware ... 90 days	
ThunderScan 4.0 w/Power Port	199.
Western Automation ... 1 year	
DASCH RAMdisk 2000k	459.

DISKS

Sony 3½″ DS/DD Disks *(box of 10)*	20.
Fuji 3½″ DS/DD Disks *(box of 10)*	20.
MAXELL 3½″ DS/DD Disks *(box of 10)*	21.
Verbatim 3½″ DS/DD Disks *(box of 10)*	21.
3M 3½″ DS/DD Disks *(box of 10)*	21.

INFORMATION SERVICES

CompuServe	
CompuServe Information Service	24.
Dow Jones	
Dow Jones News/Retrieval Membership Kit	24.

ACCESSORIES

I/O Design	
Imageware II *(Imagewriter II carry case)*	49.
Macinware Plus *(Mac Plus carry case)*	69.
Macinware SE *(Mac SE carry case)*	89.
Kalmar Designs	
Teakwood Roll-top Case *(holds 45 disks)*	14.
Teakwood Roll-top Case *(holds 90 disks)*	21.
Teakwood Roll-top Case *(holds 135 disks)*	29.
Moustrak	
Moustrak Pad *(standard 7″ x 9″)*	8.
Moustrak Pad *(large 9″ x 11″)*	9.
Sensible Softworks	
"MacAttire" covers for 512k, Plus & SE	7-17.
High Trek Mac Plus or SE carry case	call

OUR POLICY

- We accept VISA and MASTERCARD.
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- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order.
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- APO/FPO orders usually shipped 1st Class Mail.
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- COD max. $1000. Cash or certified check.
- 120 day limited warranty on all products.*
- To order, call us anytime Monday thru Friday 9:00 to 9:00, or Saturday 9:00 to 5:30. You can call our business offices at 603/446-7711 Monday through Friday 9:00 to 5:30.

SHIPPING

Note: Accounts on net terms pay actual shipping. **Continental US:** For printers and hard drives add 2% for UPS ground shipping (call for UPS Blue or UPS Next-Day-Air). For all other items, add $2 per order to cover UPS shipping. We will automatically use UPS 2nd-Day-Air at no extra charge if you are more than 2 days from us by UPS ground. **Hawaii:** For printers and hard drives, actual UPS Blue charge will be added. For all other items, add $2 per order. **Alaska and Outside Continental US:** Call 603/446-7711 for information.

1-800/Mac&Lisa

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Maximum

Adding memory's a Snap.

If you're using your Mac for business, you want to spend your time computing, not flipping disks in and out. With *MacSnap 2s* from Dove Computer Corporation you can have a bunch of programs at your click and call, because it more than doubles the amount of RAM on a Mac Plus or Mac SE (from 1 Mb to 2.5 Mb). That means you have RAM room for more than twice as many programs (depending, of course, upon their size). Using Dove's RAM disk utility, not only do you eliminate disk swapping, but, with everything in RAM, you greatly increase your operating speed. *MacSnap 2s* can be further expanded to 4 Meg and is compatible with most internal peripherals. See our Tip Sheet for more information on memory upgrades.

Dove Computer's MacSnap 2s ... 90 days $659
(Call for prices on other Dove memory upgrades).

Spool yourself!

You've just started printing your report on the effect of electronic zithers on the "Silicon Sound." Now you'd like to switch over to your 3-year projection factor on the long-term ramifications of your new data. But you've got to cool your jets 'til the printing's done. Not with *SuperSpool* (for ImageWriter I & II printers) or *SuperLaserSpool* (for LaserWriter and ImageWriters). They'll take over the print managing, while you get on to bigger and better things. Both are transparent (work in the background), are compatible with all major applications, and work on both floppy and hard disk systems.

SuperMac Software (not copy-protected)
SuperSpool 3.4 (for 512, 512E, MacPlus & SE) **$49**
SuperLaserSpool 1.1 (for 512, 512E, MacPlus & SE) **$99**
Multi-User SuperLaserSpool 1.1 (for 512, 512E, MacPlus & SE) **$259**

Tip Sheet.

Name: Casey Schnackenberg **Claim to fame:** Enjoys ice fishing at -15°F.

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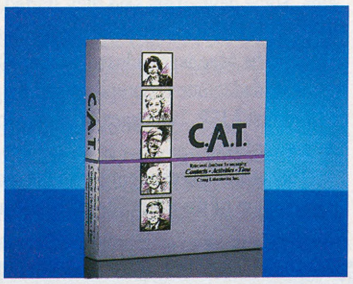

C.A.T. stands for Contacts, Activities, Time: i.e. it keeps the Who, What, and When of every event related in a single database. Enter and look for information based on a contact person, activity (meeting, letter, phone call, etc.), and/or when it happened. *C.A.T.* constantly updates your files, and generates reminders, schedules, memos, etc. based on that data. This is an exciting and powerful new management tool. Compatible with the Macintosh 512, 512E, Plus, SE and II.

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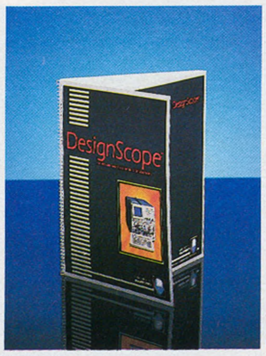

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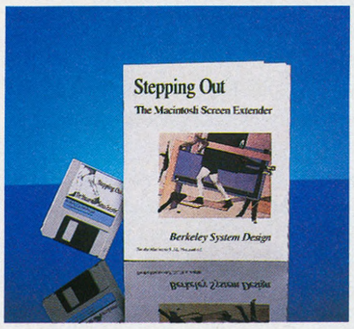

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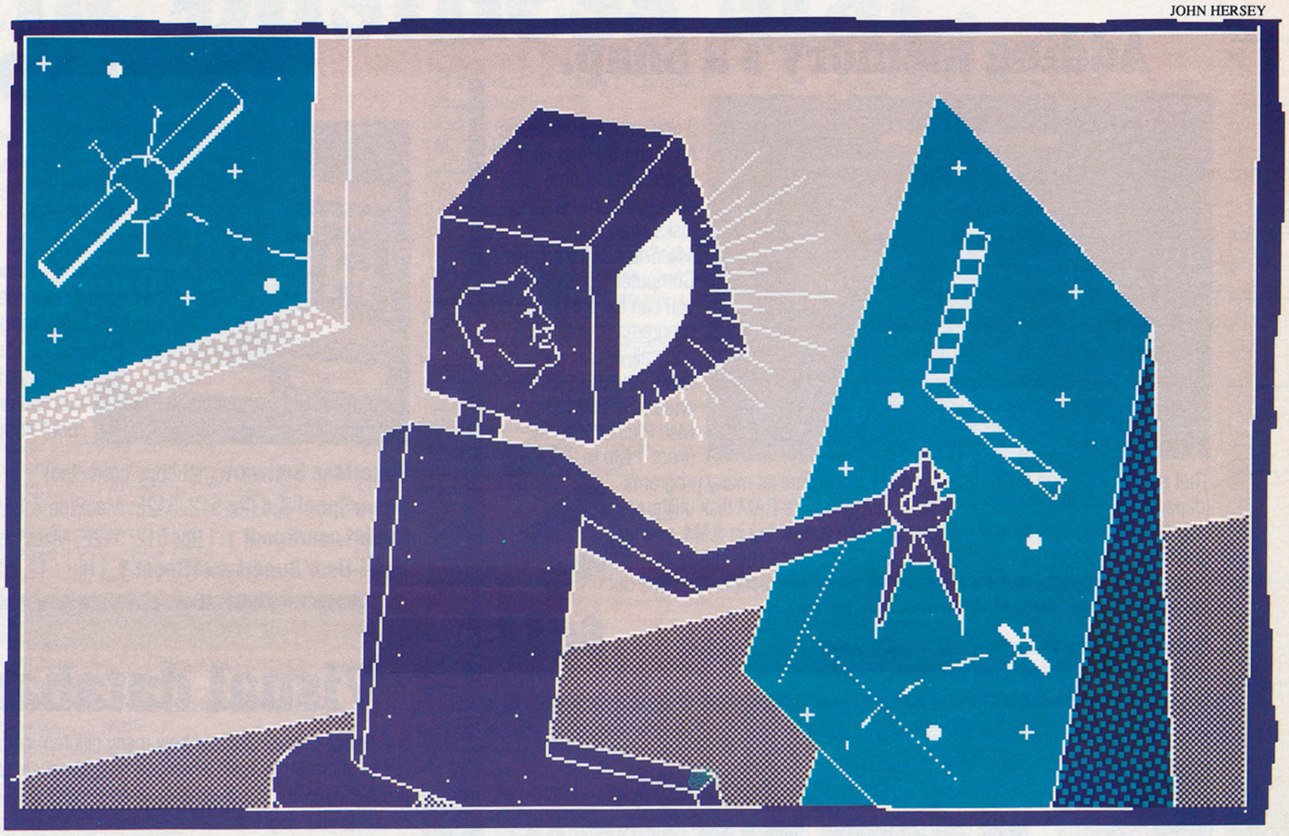
REALITY FAILS TO MATCH AI HYPE



JOHN HERSEY

But businesses find some applications for 'expert systems'

BY JIRI WEISS
MacWEEK Staff

The market for artificial intelligence (AI) is not exactly booming.

At $1.4 billion, the pie is just too small when divided among the 300 or so companies fighting for survival, according to Howard Dicken, president of DM Data Inc., analysts who track the AI market. "There is almost no profit in the industry right now," the head of the Scottsdale, Ariz., company said.

Part of the problem has been that the market for development tools, such as specialized LISP workstations, has just about dried up and end-user applications have not taken their place, analysts say.

Too much hype has given AI a bad name, Dicken said. AI has overpromoted itself, promising such wonders as word processors you could talk into, he said. "It got to such a point that there was serious talk of getting rid of the term AI altogether," Dicken said.

Aside from machine vision, which is used mainly as a manufacturing tool in the automotive and electronics industries, the most successful commercial application of artificial intelligence techniques to date are expert systems, according to DM Data. The company expects expert system revenues to reach $225 million this year.

The term "expert systems" refers to translating human knowledge into a network of rules that a computer can use to make inferences. The technology dates to the early '70s and is being used successfully in many large corporations.

The technology exists to put an expert system in the Macintosh that would train employees or give legal, medical or investment advice. Surprisingly, a quick review of the booths at any artificial intelligence show reveals few such applications. Most of the products available are languages and expert-system shells, said Gary Hendrix, a senior AI researcher and founder of Symantec Inc. of Cupertino, Calif., one of the most successful companies in the AI business. "These by themselves are of no value to the end user."

The problem with fully configured expert systems is that each one has a unique application, Hendrix said. "It's like the wedding cake business. Wedding cakes are one-of-a-kind items. If you want to make lots of them, you need many bakers." Developing expert systems can be just as labor-intensive.

Dicken said on the average it takes nine to 18 months — depending on the size of the system — to develop an expert system, including the time needed to refine it. A smaller system could take less, he said.

Each business must have its system custom tailored and that is not where profits can be made, Hendrix said.

Areas that would have a broad market, such as tax preparation or legal advice, vary too much to be practical, Hendrix said. There is no need to have an expert system fill out income tax forms; traditional software will do just as well. Some of the complex areas of tax law where expert systems may be of help may be too complicated to develop.

Much of expert-system development is in-house, and it is unlikely that corporations that spend a great deal of effort developing expert systems of their own will be marketing them. "Many systems are so customized that you'd be giving away trade secrets if you marketed them as a product," Dicken said.

But a handful of companies do successfully market general expert-system products. An expert system called the Financial Advisor from Palladian Software Inc. of Cambridge, Mass., for example, analyzes business cash flow and performs competitive analyses. All the user has to do is enter about 30 different variables to configure the system, which costs $15,000 and requires a $25,000 Apollo workstation, according to the company. But these applications, which range from financial services to direct-mail control and semiconductor design, are few.

Expert systems may be in an analogous position to where relational databases were a few years ago, Hendrix said. Relational database languages, such as dBASE III, did not really take off until resellers built easy-to-use templates for a specific industry, he said.

Because of the specific nature of expert systems, that process is likely to be much slower. DM Data said it expects it will take about five years for a network of value-added resellers (VARs) to develop.

"The expert-system developers are waiting for another Philippe Kahn (president and founder of Borland International)," said Ray Weinstock, an AI researcher who runs a San Francisco-based AI consulting company called California Intelligence.

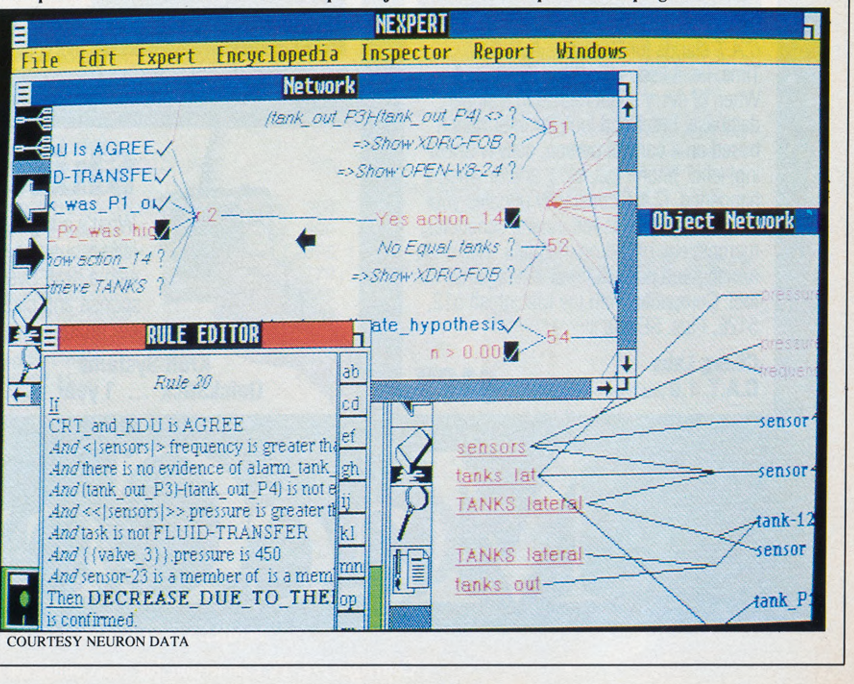
We are unlikely to see a program with the broad success of Excel or SideKick, however. The very nature of experts, Hendrix said, is that they have knowledge about a narrow area.

As a result, users of expert-system shells have two options: They can go it alone, or they can turn to a consultant, known in the AI industry as a knowledge engineer.

The Macintosh has not been the development machine of choice for a number of reasons. Some developers said they started on the IBM PC because the market is bigger or because the Mac was a closed system. Others point to inadequate C compilers and the lack of a Common LISP, languages of choice for most AI applications.

That attitude is changing with the recent introduction of the open SE and II and new

The open architecture on Neuron Data's Nexpert Object allows it to incorporate other programs and routines.



Rule 20
If
CRT_and_KDU is AGREE
And <|sensors|> frequency is greater th
And there is no evidence of alarm_tank_
And (tank_out_P3)-(tank_out_P4) is not e
And <<|sensors|>> pressure is greater t
And task is not FLUID-TRANSFER
And {(valve_3)} pressure is 450
And sensor-23 is a member of is a mem
Then DECREASE_DUE_TO_THE
is confirmed.

COURTESY NEURON DATA

languages such as the Coral Software's Common Lisp. But many companies are still taking a wait-and-see attitude, said Steve Weyer, an AI researcher at Apple Computer Inc.

Expert system success story

The leader in the Macintosh expert-system world is Palo Alto, Calif.-based Neuron Data, with its $3,000 Nexpert and $5,000 Nexpert Object expert shells. Both provide users with a complete graphically oriented development environment that the company said does not require the assistance of a knowledge engineer.

The user can at any time during the development process run the program to find out what implications a new rule may have, a process called forward chaining, or have the program explain its reasoning process, called backward chaining.

Nexpert Object users also have the option of entering descriptions of objects on which the rules can act. This shortens the design process because users can write a general rule that deals with a whole class of situations.

Because the packages are written in C, a developed application can easily be ported to a broad range of computers, including Macs, VAXes, IBM ATs and PS/2s, the company said. The royalty for a completed Nexpert runtime application is $800.

Nexpert Object's open architecture allows it to incorporate other programs and routines. A compiled version of the program also can be incorporated into other applications. The program interfaces with spreadsheets like Lotus 1-2-3, Microsoft Excel, and databases such as Belmont, Calif.-based Oracle Corp.'s Oracle and Rdb, a DEC database, Neuron Data said.

Recently, Neuron Data has started shipping aiVision, a program that can be used to build a graphic interface for Nexpert. Users can input a scanned image, for example, and set it up as an interface for Nexpert. By clicking on a selected area of the picture, the end-user is asked for information or transported to another picture in a way similar to hypertext.

To encourage VAR development, Neuron Data is offering the Nexpert development system on the Mac Plus with aiVision for $800.

Nexpert has not been praised by everyone. "I am impressed by its price," said Ed Mahler, manager of an AI program for E.I. DuPont de Nemours & Co. of Wilmington, Del.

Mahler said he has tested Nexpert and did not find it any better value than PC-based products costing $500.

"There are incremental differences in functionality, but you don't really need it. Are you solving business problems or entertaining the programmer?" he asked.

DuPont has 100 working systems on PCs and VAXes that are being used by salesmen to choose which chemicals to sell to companies, to calculate manufacturing yield and to diagnose equipment problems, he said.

Another 300 are under development. DuPont has thus far received a 1,500 percent return on its investment in expert systems, Mahler said.

More than 1,000 people have gone through a two-day training session on how to build expert systems prepared by Mahler's staff of six. "Now they are all on their own. They get help only when they ask for it," he said. As with most software, pricing of expert systems is a matter of marketing, DM's Dicken said.

Cognition Technology Corp., based in Cambridge, Mass., has recently started selling MacSmarts, a program it claims is equivalent to, if not better than, Nexpert — even down to the hypertext capabilities — for $149.95.

Low-priced systems may be mere toys, but users should not go on a buying binge either, Dicken said. "I'd recommend that people start with a real system priced around $500 and see what it feels like." ■

Satellite engineers take AI into space

BY JIRI WEISS
MacWEEK Staff

Expert systems have a reputation for taking a great deal of effort to develop, but useful systems may not always be that difficult.

It took two engineers with little programming and no artificial intelligence experience four man-weeks to develop a system now being used by INTELSAT, the international satellite communications agency based in Washington to help keep its INTELSAT V satellites in orbit.

The relatively simple system advises controllers how to configure the satellite's tiny thrusters before they are fired to change the satellites position. The manual process was tedious and error-prone, and because the procedure had to be performed only intermittently, the engineers' skills got rusty, said Arnold A.

See SPACE, Page 18

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SPACE

Continued from Page 17

Satterlee, an engineer with Comstat, a company that provides engineering services to INTELSAT.

"We could have done it in procedural code, but it would have taken much longer," he said. Complex engineering problems have to be reworked several times, which makes ordinary programming impractical. The data-driven nature of Nexpert, an expert-system shell that runs on Macs, VAXes, IBM ATs and PS/2s, allowed Satterlee and his colleague Jeffrey A. Robinson to test and debug the application as they went along.

Before starting, Satterlee said, the two spent six months looking at expert-system shells such as KEE from IntelliCorp of Mountain View, Calif., and ART from Inference Corp. of Los Angeles, both of which run on expensive dedicated LISP workstations. "I felt that I could convince my management to buy a Macintosh and spend $5,000 on software but not on a program such as KEE that would cost four to five times as much," Satterlee said.

> In the past, the novices were assigned to an experienced supervisor, but soon the expert system will do the supervision.

Now that management is convinced, Satterlee is 40 rules into a much larger 200- to 300-rule system that will be used next spring to diagnose satellite malfunctions.

The diagnostic system integrates with a simulation running on another computer that tells the system the position of the satellite in relationship to the the sun and the earth.

When a system malfunctions, engineers have to spread out the traces of all the different on-board instruments on a table, pore over them and run the simulations, he said. "It can take between 40 minutes and two days to find out what is wrong." Satterlee said he hopes to reduce that to a matter of minutes.

During its lifetime, a satellite that costs $120 million to put into orbit can earn $300 million. "A wrong maneuver can take a lot of life out of it, and each hour of delay costs the company $100,000," Satterlee said.

Satterlee uses a rule-based version of Nexpert. The structure is a complex network of if/then rules. Each rule can have many arguments and can cause many actions; it can even reset key data values or call to execute external routines.

But the rule-based approach is not sufficient for some applications, according to John Roy, a systems engineer at Hughes Aircraft. Roy uses an object-oriented version of Nexpert on DEC's Microvax II computer. This version of Nexpert, which has recently become available on the Macintosh II, lets users enter descriptions of objects in addition to rules. An object in an expert system is a collection of properties that the computer knows about each time the object is mentioned in the rules.

The Hughes' expert system, called Card Design Assistant, tells novice engineers how to design circuits so that they can be tested properly, Roy said. "Our designers are two years out of college and they know how to design a circuit that performs, but they don't know how to design it so that it is cost-effective to test or even to manufacture."

In the past, the novices were assigned to an experienced supervisor, but it will soon be the expert system that will do the supervision, Roy said. Nexpert will read in a "net list," a representation of the components and their connections, that has been generated by a design program. With that information, Nexpert will recommend where to put test points. It will even estimate how much the test will cost.

The reason why the object capability is important to the application is that out of the 100 or so components on a circuit board, many may actually be the same component but with different connections. With objects, the user only has to write rules for each type of component rather than individual instances of components, Roy said.

"This way you don't have to write one rule for each individual chip," he said.

Roy and another engineer have been working on the circuit design assistant half-time since January. The first prototype will be online Sept. 1, he said.

The main benefit of the system will be to cut down the number of times a designed circuit has to be sent back for redesign. The cost to the company of the redesigns in terms of time to market makes the investment of a $15,000 Macintosh II-based system and two engineers costing perhaps $10,000 a month a real bargain, Roy said. ■

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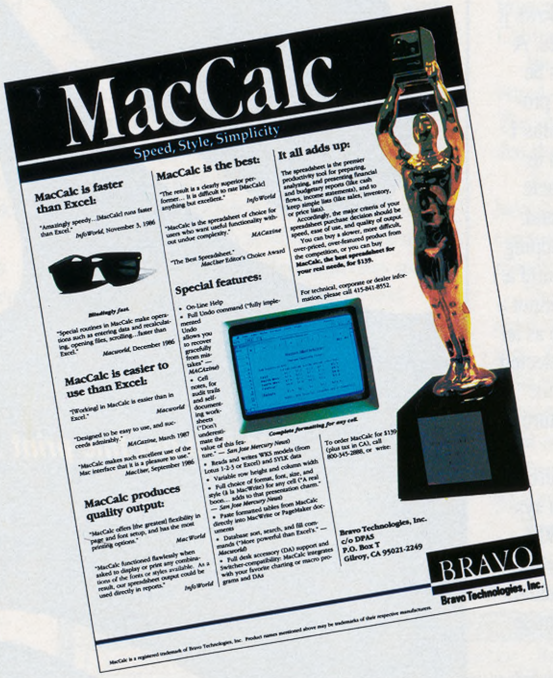
Richard Ross
Bravo Technologies, Inc.



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WINDOW ON COPROCESSORS

Bridging computer standards

Coprocessors allow users access to the best of both worlds

BY MARK L. VAN NAME
and WILLIAM B. CATCHINGS
Special to MacWEEK

Businesses today are increasingly finding themselves in the uncomfortable position of relying on two personal computer standards: Macintoshes and IBM PC-compatible systems.

This situation usually evolves slowly, as each department adopts the standard it deems most appropriate. Some users begin to rely on Macintoshes for their everyday work tasks and use them to store important information. Others do the same with PCs. In the end, the company is faced with the problem of making these incompatible systems work together. One increasingly popular solution to this dilemma is a Macintosh coprocessor.

A coprocessor is basically another microprocessor that works with the Mac's own CPU (the Motorola 68000 or, in the Mac II, the Motorola 68020) and allows the Mac to mimic another computer. In this case, that other computer is the IBM PC or PC AT.

With a coprocessor in your Macintosh, you can treat the system as if it were two machines that share a single screen and set of disk drives. You can run normal Macintosh applications in the usual way, or you can start the coprocessor and run PC applications. You also typically can read and write many data files from either environment so that information in the system is available to users of either type of system.

Sharing data between these two types of microcomputers is one of the two major reasons for coprocessors. For example, a company's employee file that is stored on a PC-compatible system controlled by the personnel department might contain address information that is needed by the publication department for its mailings of the company newsletter. Sometimes users of different systems want to work on the same data but prefer to do so with the software they are familiar with. One financial planner might prefer to analyze corporate performance data with Excel on his Macintosh, while another might want to use Lotus 1-2-3 on his PC.

Many developers of software for both types of systems are recognizing this need for data sharing and are providing tools to help meet it. Microsoft Excel on the Macintosh can read files in the standard format used by Lotus 1-2-3. Aldus' PC PageMaker can read MacPaint and MacDraw files. With a coprocessor, data files can reside on a Macintosh and yet be shared by both PC and Mac applications.

Users' desire to work with the right software for their jobs is the other major reason for a coprocessor. There is a wealth of PC software available today that Mac users are normally unable to run. With a coprocessor in your Macintosh, you can choose the program that best meets your needs, regardless of the environment for which it was designed. You can run the same software as the PC user down the hall, and you can swap data disks when the need arises.

Macintosh coprocessors always have been possible. Dayna Communications of Salt Lake City pioneered this area with its MacCharlie PC coprocessor, which was announced within a year of the Macintosh itself. The basic design of the original Mac and Mac Plus, however, with its emphasis on closed, self-contained systems, did not lend itself well to such hardware additions.

The newer Macintoshes, the SE and the II, provide expansion connections that make the addition of a coprocessor a much simpler task. In fact, AST Research of Irvine, Calif., announced coprocessors for both systems (the Mac86 and Mac286 products, respectively) simultaneously with Apple's announcement of the two new systems. These coprocessor products were designed together by AST, Apple and Phoenix Technologies. (Norwood, Mass.-based Phoenix is the maker of the IBM-compatible ROM BIOS software and chips employed by many manufacturers of PC-compatible machines.)

The Mac II is particularly well-suited to the use of a coprocessor. It contains six expansion slots on its NuBus system bus that can hold hardware additions. The NuBus is a multiple-master bus. This means that it can be shared by several different processors, each of which can vie for control of the system. Only one processor, however, is in control at any one time. Bus control chips on the system ensure that every processor gets a fair shot at periodic control of the machine. The Mac II can handle up to seven processors, counting the main 68020 CPU on the system board, in the same system unit.

Putting a coprocessor in a Mac II is a relatively simple matter. Basically, you insert the expansion cards into the open expansion slots, load the software that controls the coprocessor, and you are ready to go. Of course, different products will always have somewhat different installation procedures, but the basic steps are the same. The process is similar for an SE, although there is only one expansion slot in an SE. It can be somewhat more difficult to set up a coprocessor in other Mac models because sometimes you must connect the coprocessor board directly to the 68000 CPU.

The design of most coprocessor products tends to fall somewhere between two extreme approaches. One extreme is to provide what amounts to a full PC-compatible motherboard on one or more cards that you attach to your Mac. AST's Mac286 follows this approach. The other extreme is to put on the coprocessor board only the Intel CPU and other minimal electronics and then use as much as possible of the electronics already in the Macintosh. AST's Mac86 employs both of these approaches: It contains no memory and instead uses the

See COPROCESSOR, Page 20

Mac286 signifies Apple's commitment

AST Research of Irvine, Calif., announced its Mac286, the first coprocessor for the new Macintosh II, at the same time Apple announced the Macintosh II.

This product, which was designed by AST, Apple and Phoenix Technologies (a Norwood, Mass., supplier of ROM software and chips for many IBM PC-compatible systems), is a clear sign of Apple's commitment to providing Macintosh users with access to PC software and data. Mac286 will be available in September for $1,499. It will provide the equivalent of a PC AT that fits in a Mac II and can share the Mac's screen and hard-disk drive(s). To get a preview of the Mac286, we spoke with David Troup, AST's product manager for coprocessors.

Mac286 was designed specifically for the Mac II and will not run in any other Macintosh. Composed of two boards and software that drives them, Mac286 essentially acts as a diskless PC AT. Troup said AST knows of no PC software, including such traditional problem programs as Flight Simulator, that will not run on the Mac286. Furthermore, AST is planning to verify that it runs the top 100 PC applications prior to releasing it.

The boards use a one-wait-state, 8-MHz Intel 80286 CPU. There is a socket for an Intel 80287 floating point accelerator as well. Of the Mac286's 1 Mbyte of memory, 640 Kbytes are available for running programs. The other 384 Kbytes are used to store the ROM BIOS software and screen image.

> Mac286 was designed specifically for the Mac II and will not run in any other Macintosh. Composed of two boards and software that drives them, Mac286 essentially acts as a diskless PC AT.

AST provides MS-DOS 3.2 and GW-BASIC with the Mac286. This software comes in the standard PC 5.25-inch floppy-disk format and requires an external PC-compatible 5.25-inch floppy-disk drive, like Apple's PC Drive 5.25. Because of the variable speed of Mac floppy drives, you cannot use the internal 3.5-inch floppy drive with standard PC disks.

Once you have installed the boards and the software, you can start the coprocessor simply by clicking on its icon or on any MS-DOS file stored on your disk. MS-DOS and MS-DOS applications will run on the coprocessor in a normal Macintosh window. The maximum size of the window is determined by the PC video mode you are using. Mac286 supports three standard PC video modes: Monochrome, Color Graphics (CGA) and Hercules. If you use CGA mode on a Mac II monochrome monitor, the system displays colors as shades of gray.

You also have available many of the other familiar features of the Macintosh environment through the Mac286's software. Desk Accessories are still available while you are executing a PC application. You can use the Clipboard to move text between the MS-DOS world and your normal Macintosh applications. To move text from a PC application, you mark the text in the Mac286 window with the mouse and then use the Edit option on the Menu Bar to put it into the Clipboard. When you paste text from the Clipboard, it is entered into the PC application just as if the user had typed it.

Text you enter directly comes, of course, through the keyboard. Unfortunately, the two Apple keyboards are not compatible with any of the PC keyboard "standards." The Mac286 software provides a menu that lets you select PC function keys, and they provide PC keyboard emulations for both Mac II keyboards. If you plan to use Mac286 extensively, however, stick with the new Apple Extended Keyboard. It closely resembles the IBM Enhanced Keyboard and is much easier to use with PC software than the Apple Standard Keyboard.

The Macintosh mouse also is not compatible with the two-button mouse used by some PC applications. Mac286 addresses this difficulty by providing a menu option with which you can use the Macintosh mouse to emulate a Microsoft Bus mouse. You type several keys to simulate the second mouse button.

Mac286 allows you to share a Mac II hard-disk drive between both standard Macintosh applications and PC applications in two different ways. The first method is to reserve a portion of the Macintosh's hard disk as an emulated PC drive C. On the Macintosh, this "pseudo-disk" appears as a single file. To MS-DOS running on the Mac286 coprocessor, however, this file appears to be a physical hard-disk drive. The main reasons for this approach are performance and the ability to install copy-protected software. Many hard-disk-based copy-protection schemes depend on the disk sector on which a file resides. This approach preserves that mapping. However, the Macintosh cannot access the PC files within the pseudo-disk.

The second approach to sharing a hard-disk drive allows files to be easily shared between both processors. It is slower than the first method but still considerably faster than a PC floppy drive. You use a Mac286 menu option to make any folder on your disk appear to the PC software running on the Mac286 as a PC hard disk drive D. The files in this folder then are visible to MS-DOS as if they were on its D drive.

Any files you create from the PC environment in this way can be used by any Macintosh application that can read their format. For example, you can write a file from Lotus 1-2-3 under Mac286 and then read it with Excel. Of course, Macintosh files can be used under MS-DOS in a similar fashion.

Both of these approaches to sharing the hard disk have some performance penalties, but they are likely to be troublesome only

See MAC286, Page 20

COPROCESSOR

Continued from Page 19

memory already in the SE.

No matter how they are designed or installed, most coprocessors provide the same fundamental capabilities. They come with control software that lets you open a window on your screen and run PC software in that window. They provide you with access to disk storage. Typically, they either include a PC-compatible floppy-disk drive or require that you purchase such a drive. This drive is usually a 5.25-inch drive, such as Apple's PC Drive 5.25, which can read and write floppy disks in one or more of the standard PC formats.

If you have a hard disk attached to your Macintosh, most coprocessor products will allow you to store files on it in both Mac and PC formats. When you run Mac applications, it is business as usual. When you want to run PC software, you only have to start the coprocessor application, and it will start MS-DOS executing on the PC-compatible CPU installed in your Macintosh. You can move between these two environments freely and simply.

Limits and hidden costs

The one important limitation is that you cannot have major applications running simultaneously on both processors. (Often Macintosh Desk Accessories can continue to run while you are executing PC software on the coprocessor.) This limitation reflects the inability of the Macintosh system software to provide true multitasking. If you have enough memory, you can use Switcher on a Mac Plus or SE to come closer to multitasking with many coprocessors. Although Switcher currently does not run on the Mac II, you can use Apple's new MultiFinder on any Mac.

With Switcher or MultiFinder you can leave a Mac application in the middle of a job and start up a coprocessor application. However, most Mac applications will stop running and will not resume execution until you return to it.

As you might expect, you do not get all of these abilities for nothing. Coprocessors can be fairly expensive. For example, the AST Mac286 lists for $1,499 and the Mac86 for $599 — and those prices do not include the cost of a PC-compatible floppy-disk drive. These prices are very close to those of some of the cheaper PC clones now available.

Not all of the costs of using a coprocessor are so obvious. For one thing, most PC software packages offer user interfaces that are very different from the Macintosh standard. When you use such PC software, you run the risk of losing all of the ease-of-use benefits for which you might have bought your Macintosh in the first place. You can end up with additional training expenses, either direct ones for classes and explanatory books or indirect ones, such as the cost of the time you will spend learning to use the unfamiliar PC software.

Despite the possible costs, many Macintosh users are likely to turn to coprocessors in the future in order to provide an environment in which PC and Macintosh applications can coexist and share information. As more users buy these products, more companies will supply them, and that should help drive down the prices. Also, Apple has said that true multitasking software for the Macintosh is likely, possibly in future versions of MultiFinder. When you have such system software and a coprocessor, you will be able to run both PC and Macintosh applications simultaneously on your Macintosh.

If you need to share data between PC and Macintosh applications, or if you want to run software designed for both system types, coprocessor products represent an emerging technology that may meet your needs.■

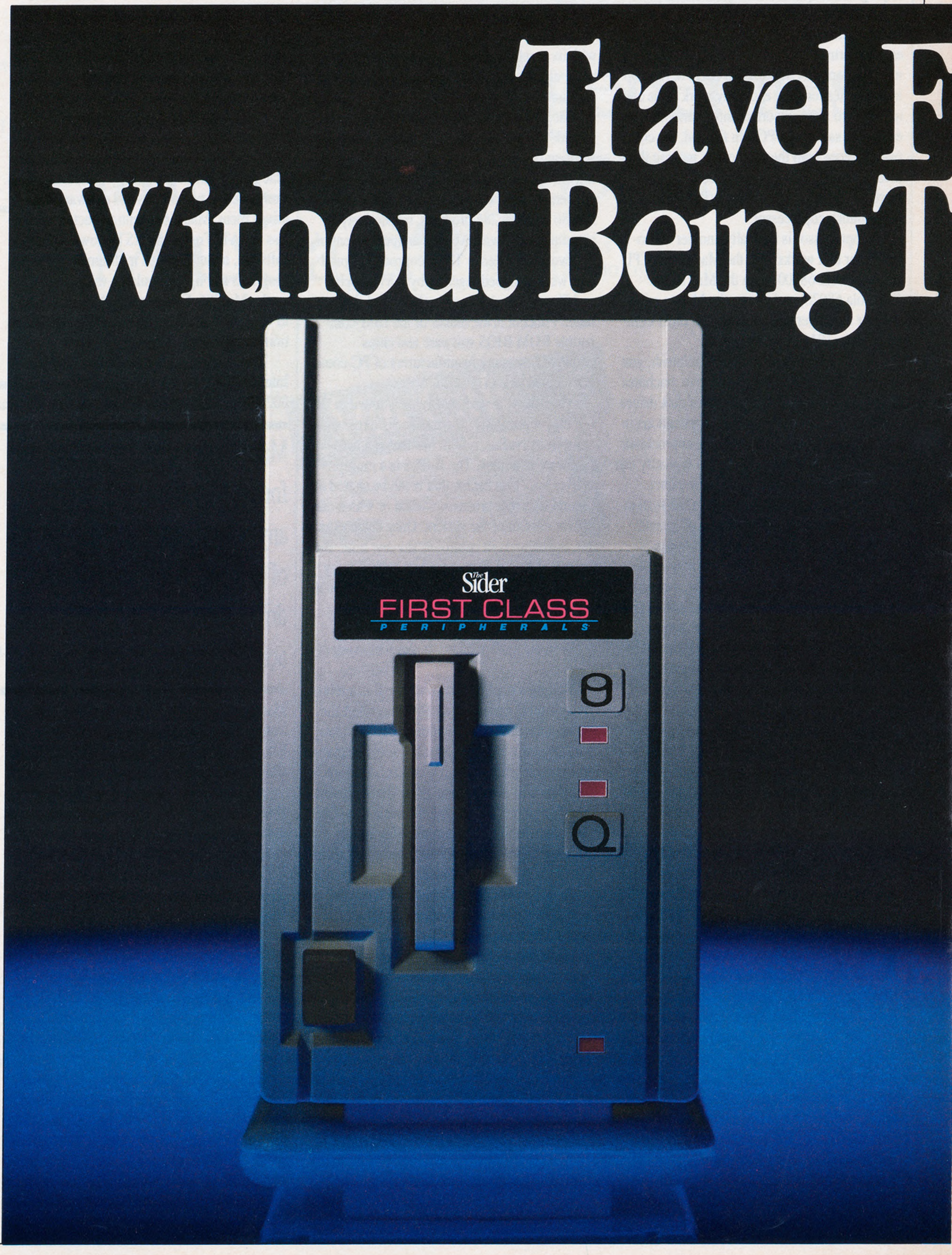
MAC286

Continued from Page 19

when you are running disk-intensive applications.

Troup said that on AST's benchmarks, the Mac286 beat a standard PC AT on tests of pure computation speed. The area where you are most likely to notice a performance problem is the management of the screen. The CGA mode is slower than either the Monochrome or Hercules modes, and both of those are somewhat slower than a standard AT's. This performance degradation occurs because all PC software screen writes are intercepted by Mac286 and translated into the appropriate calls to the Mac's QuickDraw software. Overall performance, however, will be fairly close to that of a standard AT system.

With AST's Mac286 you can run PC applications on your Mac II with reasonable performance and share data files between PC and Macintosh applications. For the Mac II user who also needs to run PC software, this coprocessor may be the answer. *—By Mark L. van Name and William B. Catchings*



CATCHING UP

Continued from Page 12

In fact, the Macintosh II compares favorably to even the PS/2, IBM's high-powered workstation, in almost every respect. Both Apple and IBM offer 1 Mbyte of RAM as standard. Apple offers floating point coprocessors as standard; on IBM it's an option. Both vendors offer the same addressable memory (64 Mbytes), and the same screen resolution (480 by 640 pixels). But Apple offers 256 colors as standard compared to the IBM's 16. An Apple workstation also costs a lot less than IBM's. A basic intermediate color Mac II system costs $7,614 while a similar IBM system costs $9,090.

Finally, the recent announcement that VersaCAD, manufacturer of a leading IBM PC-based CAD system, will begin shipping its VersaCAD/Macintosh in the fall is a major milestone in the Macintosh's journey to credibility in the CAD world. Some experts also believe that AutoCAD, the leading PC-based CAD program will soon be available for the Macintosh. — *By Lawrence Stevens*

CAD

Continued from Page 12

Auxiliary functions to CAD also are becoming available to the Macintosh. Most notable is CAD/CAM (computer-aided manufacturing). This technology allows designs created on a CAD system to be automatically transferred to programmable tools. Rino Manufacturing, a small company in Canoga Park, Calif., does work for large companies such as Hughes Aircraft and one-man shops like Joe Lewis'. Bob Reilly, Rino's manager, said once the CAD part of the program is learned, the CAM aspect is relatively easy. It is certainly easier than the old method of programming the tools individually. "Using the CAM part of MGMStation is like programming without a programmer," he said.

When a blueprint comes into Rino Manufacturing, Reilly redraws it on MGMStation's CAD system. That takes most of the time in the process. Next, selections are made using the mouse pointer and dialog boxes, including tools to be used, entry and exit points and coolant commands. The program then automatically computes spindle speeds and feeds based on the material and tools. Then Reilly is able to see a graphic representation of the tool selections and tool paths. Finally the instructions are sent to the various tools.

"If the part is drawn correctly and if there is nothing unusual about it, the time from completion of the drawing to input into the tooling system can be less than five minutes," Reilly said.

Normally, Reilly has to have one part go through before he starts production in order to check for errors. In some cases, alterations have to be made to maximize the use of certain tools or to compensate for tools that may be out of order. But in general, moving from CAD to CAM is straightforward and quick.

While programming tools this way saves Reilly a lot of time, it is redundant. "First the customer creates the product on his CAD system. Then he prints out a blueprint. The blueprint is sent to us. And we draw it in our CAD system. It's a process that is bound to create errors along the way," he said.

The most efficient means of transferring designs is for it to be created on a CAD system that is compatible with the manufacturer's CAM system. Unfortunately, very few of Reilly's customers use Macintosh-based CAD systems. And his major gripe is that Mac-based CAM software is not compatible with the more popular IBM PC-based CAD systems.

Another CAD-related tool has recently made its premiere in the Macintosh world. MSC/pal by MacNeal-Schwendler Corp. of Los Angeles is the first finite element analysis system available for the Mac. In finite element analysis, a structure or mechanical component that was drawn on a CAD system is broken down into smaller elements. Each of these elements can be analyzed by the computer for tolerance to stress, vibration, pressure and temperature. Therefore, problems with the design can be caught right on the screen before a prototype is created.

The design can be created on MSC/pal, or it can be created on a number of CAD and drawing programs, including Design Dimension 3-D, MacDraw and MiniCAD.

The flurry of new designing products available for the Macintosh is bringing sophisticated drawing systems within the reach of inexperienced computer users. Many firms that already are using Macintoshes for word processing and simple drawing will find that their machines can now do a lot more.

And those who have given up on CAD after an experience with PC-based AutoCAD or VersaCAD should probably now take another look at the technology. ■

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A winner at making connections

Abelbeck's VersaTerm has all the features needed for using a mainframe with a Mac, including emulation of the VT100, Tektronix 4014 and Data General 200 terminals.

VersaTerm 3.10

Abelbeck Software
c/o Peripheral Computers & Supplies Inc.
2457 Perkiomen Ave.
Mount Penn, Pa. 19606
(215) 779-0522
Retail price: **$99.00**
VersaTerm Pro lists for $295.

Strengths: The premier terminal emulator for connecting the Macintosh to mainframe computers; good VT100, Tektronix and DG200 terminal emulation and file-transfer capabilities; excellent support from the program author; not copy protected.

Weaknesses: Documentation does not match the quality of the program; lacks a full-featured scripting language.

BY VERNON KEENAN
Special to MacWEEK

For people who use their Macintosh connected to a mainframe computer, VersaTerm is a big winner.

It provides excellent emulation of the VT100 terminal as well as the popular Tektronix 4014 graphics terminal and the less common Data General 200 terminal. It fully supports the popular Kermit protocol, among others, and it's loaded with advanced features that complement full-screen editors and other mainframe applications.

For other users — those who frequent online information services and bulletin boards, for example — VersaTerm has a number of features designed to make telecommunications easier. Favorite phone numbers can be listed in a menu, and simple macros are easily defined and played back with Option-key commands. But VersaTerm lacks a full-featured scripting language to handle sophisticated interaction with an information service, and its documentation is not good enough for the novice.

Version 3.1 of VersaTerm is one of the first programs designed to take advantage of the background processing capabilities of Apple's forthcoming MultiFinder. It will reportedly download data nearly as quickly in background mode as in normal operation, and it will run scripts and even beep when prompted in the background.

VersaTerm's features are easily surveyed by scanning its numerous menu options and dialog boxes. The VT100 terminal-emulation protocol is fully supported, with the exception of double-width and double-height characters. The special VT102 printer and screen-editing capabilities are implemented, allowing VersaTerm to speed up VAX/VMS editors and support automatic use of a serial printer. We do have one aesthetic complaint: In VersaTerm's VT100 alternate character set, there are gaps in the line-drawing bars where other terminals and emulators have continuous lines.

All of the usual file-transfer protocols and standards — ASCII, MacTerminal, Xmodem, and MacBinary — are available. Text from the host is easily captured in a file, and a text file can be sent to the host. Using Kermit, VersaTerm can exchange multiple files with a host. The "quick and dirty" version of the Xmodem, in which the error-correction aspect of the protocol is pre-empted on the assumption that no errors will occur, is available. The result is that data arrives from the host in a nearly continuous stream, and file transfers are greatly speeded up. If errors do arise, the program simply aborts the transfer.

The 4014 Tektronix emulator permits use of mainframe graphics programs, with the mouse providing input. VersaTerm automatically switches between character and graphics modes by detecting commands from the host computer. A mainframe graphic can be saved in MacPaint format, and a previously saved picture can be recalled for display. (VersaTerm Pro, an enhanced version of the program, offers even more features for handling graphics. See related story.)

When a serial printer is attached, a work session can be printed as it occurs. With a LaserWriter or AppleTalk ImageWriter, a session can be saved to a text file and printed later. On-screen text can be selected and sent to any printer.

> VersaTerm's integration of Mac and mainframe features makes using a mainframe application a little more fun.

The mouse is used with mainframe editors. Holding the Option key and pressing the mouse button causes VersaTerm to send instructions to a host computer to move the cursor to the indicated position. Cursor movements for UNIX editors and ANSI arrow keys are supported. These features — rather astonishing at first for mainframe veterans — make the host computer seem a little more Mac-like.

The scrolling screen buffer found in nearly every terminal emulator is supported. As in MacTerminal Version 2.2, data can be captured when a Screen Clear command is received from the host. VersaTerm makes the buffer easier to use by providing key commands to scroll up and down through the previously received text. The Edit menu offers a Find command to search for a text string in the buffer. The mouse is used to copy data from the screen buffer and paste it back to the host. Holding down the Option key while pasting allows a user to edit the characters in the Clipboard.

The 132-column mode is supported by clicking in the zoom box or using a key command to enlarge the main window. Although enlarging the window is good for Mac II or large-screen setups, we would have preferred horizontal scroll bars.

Macro commands are automatically defined by turning on the macro recorder and interacting with the host computer manually. VersaTerm will watch the user's interaction with the host and remember prompts and responses. Selection of menu commands also can be recorded in a macro, which is played back by selecting a menu item or pressing an Option-key combination. A user's ability to edit a recorded macro is limited, however, by VersaTerm's awkward scripting "language," which is little more than a set of obscure meta characters. This primitive scripting capability is easily surpassed by Red Ryder and MicroPhone.

On the 512KE or later Macs, VersaTerm will detect what type of keyboard is in use. The arrow, the Control and the Escape keys are automatically supported. When VersaTerm is run on a Mac SE or Mac II, the Control key must be used to send control characters to the host — the Command key is automatically configured to select menu commands. Since most other terminal emulators use the key to send control characters, this new configuration takes a while to get used to.

The appearance of VT100 and DG200 special-text attributes is controlled through a special-configuration menu. On a Mac II display, different colors or gray levels may be assigned to bold, bright, underline, blink and reverse video text. All other Macintosh displays use different styles of bolding, underlining and inverse video to represent all the possible special-text attributes.

In our comparison of display speeds on the most popular terminal emulators for the Macintosh SE, VersaTerm came up the winner. (See MacWEEK, Aug. 11.) Mac 240 from White Pine Software Inc. of Amherst, N.H., comes very close, but it does not support a scrolling text buffer. Although VersaTerm's speed is not comparable to a real VT220 terminal at 19,200 baud, it is the fastest of all tested packages.

We have used VersaTerm continuously for a period of several months, changing to new versions as they become available, and have yet to experience any bombs that are reproducible and attributable to VersaTerm.

When using the Tektronix graphics emulation, we were disappointed with the quality of the output because VersaTerm (standard version) discards the high-resolution data of the original image and treats it as a simple bit map. If you want better reproduction of Tektronix graphics from the LaserWriter, you will have to move to VersaTerm Pro.

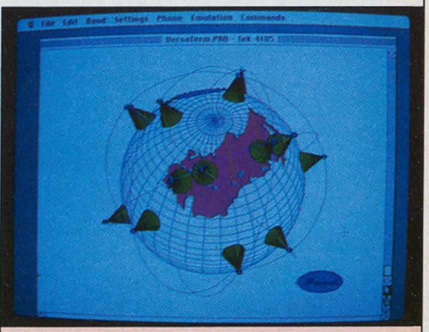
The extensive capabilities of VersaTerm are not matched by the documentation. Novice telecommunication users who are looking for a step-by-step introduction to using online services will be disappointed by the absence of explanations in the manual. There is a total lack of discussion of the basics of using a modem, like what "baud" and "parity" mean. Very few examples are provided, and there aren't many screen dumps. A more tutorial and basic introduction to using the program is greatly needed. Most of the newer features of the program are covered in addenda, and a lot of conflicts arise when comparing the original documentation to the more recent additions.

Some aspects of the program are difficult to use. Automatically defining macros is easy, but modification once they are generated is not. In contrast to MicroPhone, VersaTerm will not prevent you from entering a macro with syntax errors.

Abelbeck Software provides excellent support. Calling the support line usually puts a user in touch with the program's author himself. We were using a demanding VAX/VMS database application and noticed a bug in the VT100 video attribute handling. Shortly after notifying the author of the bug, we received an updated version in the mail. Updates are sent to registered users for a nominal handling fee.

The author's record of enhancing the program is remarkable. In VersaTerm's three-year history, many new versions have been published, each providing significant enhancements to the program. Changes have been evolutionary, not radical redesigns. The usefulness of each enhancement reflects the author's willingness to listen to his users.

If you use your Macintosh as a workstation connected to a mainframe on a daily basis, then VersaTerm is the clear choice. Its excellent performance and integration of Macintosh and mainframe features make using a mainframe application a little more fun. If, however, you are using a terminal emulator primarily to access bulletin-board or information services, a package with better scripting capabilities, like MicroPhone or Red Ryder, may be better suited. ■



COURTESY ABELBECK SOFTWARE

Chemical compound design done in MACCS software by Molecular Design and emulated by VersaTerm Pro.

Versaterm Pro offers more graphics support

Abelbeck Software offers another high-end, higher-priced telecommunications program called VersaTerm Pro. The two programs offer equal functionality in basic terminal emulation. The difference comes mainly in the area of graphics support. VersaTerm Pro supports the Tektronix 4105 protocol, which includes color. It provides separate text and graphics windows, and graphics can be scrolled.

Whereas VersaTerm saves images only in MacPaint format, the Pro version also supports copying a Tektronix graphic into a PICT-format file, letting users modify their Tektronics image with MacDraw. If you need these extra graphics capabilities, then the dollar difference may be worth it for you. ■

A Suitcase full of Desk Accessories

A brand-new program provides access to an almost unlimited supply of Desk Accessories and fonts without having to use the Font/DA Mover.

CAMILLE GOOD

Suitcase

Software Supply
599 N. Matilda Ave.
Sunnyvale, Calif. 94086
(408) 749-9311
Retail price: **$59.95**
Strengths: Breakthrough software that makes hundreds of fonts and Desk Accessories available at any time; highly reliable; virtually transparent to the user.
Weaknesses: Inadequate handling of FKeys; doesn't automatically solve font-numbering conflicts.

BY LOFTUS E. BECKER JR.
Special to MacWEEK

Have you ever found yourself wishing that you could squeeze a few more Desk Accessories into your Mac system? Or that you could have more fonts available without taking the time and trouble to run Apple's Font/DA Mover? If so, you'll probably want to pick up Suitcase, a brand-new program that provides effortless access to virtually unlimited numbers of Desk Accessories and fonts.

Fonts and Desk Accessories (DAs) have always been among the Macintosh's strongest points. Beyond the typefaces Apple supplies with every Mac, some 500 others are now available — decorative headline fonts, foreign language fonts and special symbol fonts, along with a wide variety of text fonts for both the ImageWriter and the LaserWriter. Scores of shareware and commercially distributed DAs — miniprograms designed to be accessible even while other applications are open — contend for a slot under the Apple. Among the options are convenient and powerful painting and drawing programs, timekeepers, outliners, word processors, spelling checkers, terminal programs, file-management utilities, a spreadsheet and even a background downloader.

But Mac users trying to take advantage of this wealth of possibilities have had to contend with two problems. First, a font or DA ordinarily has to be installed in the current System file before it can be used. With a utility such as Apple's Font/DA Mover, the process is not difficult, but it is tedious and requires advance planning. Second, the Mac system limits the number of DAs and fonts that can be installed at any one time. With more and more useful DAs appearing every month, the 15-DA maximum has become a particularly annoying constraint for many users.

Suitcase is not the first software designed to circumvent these problems, but it is the most recent — and without doubt the best. Written by Steve Brecher, a programmer well-known for several earlier Macintosh utilities, the long-awaited program has just been released by his new company, Software Supply of Sunnyvale, Calif.

Suitcase automatically opens "suitcase files" in the System folder — the kind of files in which DAs and fonts (or both) are stored and to which the Finder assigns a suitcase icon. With a small exception, discussed below, all fonts and DAs in the files Suitcase has opened are available just as if they had been installed in the System to begin with. The same files can even include FKeys, the small routines ordinarily invoked by pressing Command, Shift and a number key. Only 10 suitcase files can normally be open at once, but since each of them can hold 52 DAs, 200 sizes of fonts and even more FKeys, the limitation is hardly serious. At any time, the user may close opened suitcase files or open others — within the preset limit of 10 — through Suitcase's built-in DA.

Installation

Installation requires nothing more than dragging Suitcase and files for the desired fonts, DAs and FKeys into the System folder on the boot disk — ideally a hard disk, but a floppy will work too. Thereafter, every time you start the Mac from this disk, these fonts, DAs and FKeys are available at any time from the same menus as those installed in the System file itself. The process is explained in detail in the manual — except with respect to FKeys, which, unfortunately, are scarcely discussed.

One qualification is that all sizes of a font must be in the same file. If the System file contains Geneva 9 and 12, as it normally must, any additional Geneva sizes you want must be installed in the System file and can't be accessed through suitcase files.

Operation

In normal operation, Suitcase is almost entirely transparent; the only signs that it is working are a Suitcase entry under the Apple and additional choices in your DA and Font menus (and in the FKey menu, if you have one of several utilities that add one).

Because scrolling to the bottom of a long Apple menu can take some time — we have had as many as 132 DAs installed — the Suitcase DA also provides a method for selecting accessories from the menu by typing the initial letters of their names. Since Suitcase lets you call up its menu with a user-definable Command-key combination, the effect is that any DA can be launched entirely from the keyboard, without resorting to the mouse. Although this feature is not unique to Suitcase — a free FKey available from user groups and telecommunications services provides the same capability — it is a great convenience, especially for touch typists.

Suitcase is written to avoid possible numbering conflicts among accessories and their associated resources. In the program's present form, however, it is up to the user to avoid conflicts in font numbers (rare) or FKey numbers (more common). If such a conflict does occur, Suitcase won't crash, but the user may not get the expected font or FKey. A built-in substitute for Font/DA Mover, allowing the user to include more fonts or accessories in existing suitcase files and automatically resolving number conflicts, would be a convenient addition to the program.

So would a more comprehensive approach to FKeys. For now, easy access to large numbers of these handy little resources requires an additional program, like Carlos Weber's excellent — and free — FKey Manager package.

Suitcase does work in multiple-application environments like Switcher, but all the suitcase files to be used must be opened before the context-switching software is launched.

Compatibility and support

In months of testing, Suitcase has proven highly reliable and bug-free. It runs smoothly with a number of accessories that don't function properly when launched from less sophisticated "DA runners" designed to bypass the 15-DA limit. In a very few circumstances, the extra files Suitcase opens can slow performance. The only time we were aware of this was when using ResEdit. On an SE with Suitcase installed it took seven seconds instead of four to open and display the resource types in a standard System file.

One possible problem is compatibility with other INIT resources designed to modify the few ROM routines that Suitcase replaces. Such INITs can function with Suitcase only if the other INIT runs after Suitcase, not before. On HFS systems, INITs are run in alphabetical order, so renaming one INIT or the other will solve the problem.

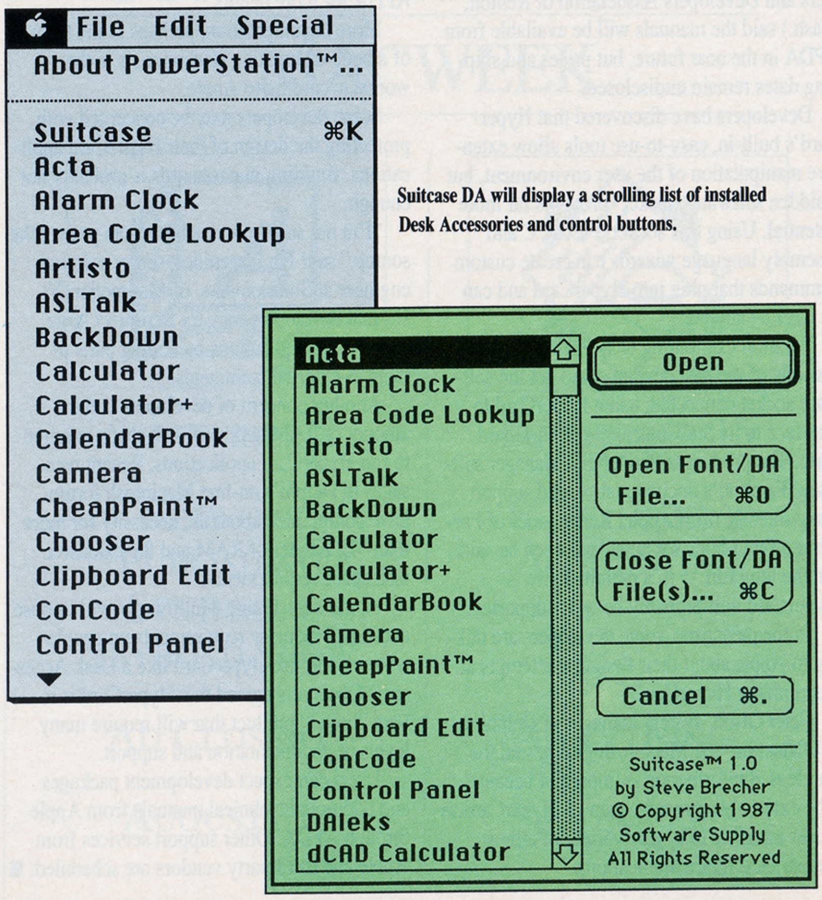
The manual is generally good — extremely good in its discussion of possible problems and remedies — but the index is less than complete. Support is available by telephone (not a toll-free number) or through several telecommunications services, including CompuServe, GEnie, Delphi and BIX.

Suitcase comes with a free copy of Pyro!, a screen-blanking utility with many user-selectable options and an attractive fireworks display that bursts into color on a Mac II. The distribution disk also includes an evaluation copy of Software Supply's PowerStation, a fast and powerful substitute for the application-launching features of the Finder.

Conclusion

Suitcase is an order of magnitude better than previous approaches to the management of fonts and DAs. After a few hours of use, we would not willingly give it up. Those who have wanted to stretch beyond Apple's limits on installed DAs and fonts need look no further. ■

Loftus E. Becker Jr. is a professor of law at the University of Connecticut and a prolific author of shareware and free utility software. Among his programs are "Other ... and "Fontsie," which make possible the use of uninstalled DAs and fonts, respectively.



Suitcase DA will display a scrolling list of installed Desk Accessories and control buttons.

ADOBE

Continued from Page 1

products at Mitsubishi, confirmed that Mitsubishi has no definite plans at this point. But he said, "We're always looking at the possibility of PostScript capability for our printers."

"It would be a great thing. I'd be very excited about [such a printer]," said Hugh Dubberly, head of computer graphics in the creative services department of Apple.

Industry experts assume that Adobe Systems is perfecting its color PostScript technology on thermal transfer printers and that the next step will be to port that technology to color laser printers, said analyst Naomi Luft of Datek Information Services of Newtonville, Mass.

"They're a smart outfit. Any work that they do I expect would be generalized. But most people don't care how the device lays down color as long as the results are good," said Dubberly. He also said that, judging from the output he's seen from thermal transfer printers, he's not sure there would be a need for a color laser printer, considering how much more expensive that technology is.

As previously reported, Colorocs Corp. of Norcross, Ga., has already developed a color laser printer engine with a resolution of 300 dpi and a printing speed of 10 pages per minute. The engine combines laser-beam technology with electrophotographic color copier technology, said Bob Girola of QMS in Mobile, Ala. At that time Girola also said, "We will eventually add support for PostScript."

QMS owns 6 percent of Colorocs and is the OEM printer manufacturer for the engine.

If a printer with the Mitsubishi engine were to hit the retail market, it would probably cost $10,000 to $12,000 and be based on an engine worth $8,995, said one analyst. A printer based on the Colorocs engine, the analyst said, would cost at least twice that much.

However, since thermal transfer requires special paper, the cost per copy for the user is much higher than with a laser printer. ■

HYPERCARD

Continued from Page 1

mentation, the instructions for creating custom external commands and functions, was rarely mentioned in the barrage of show speeches and promotional brochures.

For programmers and stackware developers, solving the mysteries of HyperCard will likely include a close reading of a 170-page manual from Apple, "Script Language Reference Manual: HyperTalk Language." It contains about 25 pages of documentation on external commands, including examples. Another manual, "Inside HyperCard," delves deeper.

Dave Lingwood at APDA (Apple Programmers and Developers Association of Renton, Wash.) said the manuals will be available from APDA in the near future, but prices and shipping dates remain undisclosed.

Developers have discovered that HyperCard's built-in, easy-to-use tools allow extensive manipulation of the user environment, but a hidden software "socket" provides far more potential. Using this socket, Pascal, C and assembly language wizards can create custom commands that plug into HyperCard and can be used by anyone.

Farallon Computing of Berkeley, Calif., was one of the first developers to get the software socket connected, using HyperCard to interface to its StarController network hardware. The product is PhoneNET Manager software. Farallon's documentation and support came directly from Apple. Reese Jones of Farallon offered hope for outsiders when he said: "In the long run — in a month or two — HyperCard will probably be well-supported."

In the meantime, some developers are talking to Apple about their fledgling attempts at customizing HyperCard.

Peter Olson, system manager of Delphi's ICONtact on-line Macintosh group, said the unreleased information is important because "the external commands open up HyperCard as a user interface to a wide variety of almost unrestricted future applications."

Olson, impatient to get started, used Steve Jasik's MacNosy debugger along with Apple's ResEdit application to explore the internals of HyperCard, figuring out data structures and algorithms bit by bit.

Goodman's book, extensive in many other respects, skirts the details of external commands, leaving them to hard-core programmers. The "HyperCard User's Guide" packaged with HyperCard ignores the issue, too, but refers to a "HyperCard Script Language Guide." HyperCard on-line help stacks come up with nothing when you do a "Find" on key words related to external commands, but there's an obscure note on one card referring to APDA for more details.

More documentation, perhaps in the form of a book on creating stackware, is in the works, according to Apple.

Some developers may be concerned with protecting the design of their HyperCard applications. Building in passwords is probably not enough.

"I'm not sure how much you can protect the source," said Jan Eugenides, senior software engineer at Solutions Inc. of Montpelier, Vt. He said developers may try to protect large HyperCard applications by coding parts of them as external commands.

Another concern of developers is the amount of RAM and hard-disk space required to run HyperCard applications. Recent messages in Delphi's on-line Macintosh forum have complained about the necessity for more than 512 Kbytes of RAM and the extensive disk space requirements.

Apple's upcoming MultiFinder will impose additional memory requirements on people who want to use HyperCard like a Desk Accessory. Observers agreed that HyperCard is a very "broad" product that will require many levels of documentation and support.

Users can expect development packages and additional technical manuals from Apple through APDA. Other support services from Apple and third-party vendors are scheduled. ■

LABORATORY

Continued from Page 1

tems offer," said Richard Silver, president of Cambridge Electronics, a value-added reseller (VAR) of engineering products based in Somerville, Mass.

Apple hopes to stake a healthy claim in this market. Dave Kulbarsh, manager of marketing programs for Apple, said, "Data acquisition is a large part of the scientific vertical market, which has been specified as one of the five or six vertical market targets for the Mac."

The data-acquisition market is generally broken into industrial and scientific/engineering. The industrial arena has historically been serviced by specially adapted mini- and superminicomputers that can function in the hostile environments of most factory floors. Only in the past few years have microcomputers been used for tasks other than simple acquisition.

While observers view the Mac II as the machine that has broken the dam, previous Macs have worked with data acquisition and control software and hardware. Companies like IDAC, GW Instruments of Cambridge, Mass., and National Instruments of Austin, Texas, have had products available for a while, but most of them were either software packages or external boxes that hooked to the Mac's serial interface port. These products filled a niche for many applications, but the lower end of the market was held by MS-DOS-based products.

"There are a number of things that make the IBM PC a good machine for data-acquisition products, some of which the Mac shares, some of which it doesn't. You can get all sorts of different types of machines, especially rugged boxes for industrial use and ones with expansion boxes for additional cards. You also can have an open machine (like the Mac II) that allows cards to connect directly to the bus, which is an important feature," said Dick Eckhardt of CyberResearch, a VAR in New Haven, Conn., specializing in data-acquisition products.

The Mac's greatest strength in the data-acquisition market is its ease of use and consistent user interface, which can help users get productivity from their machines without a large investment in time and training.

"For both the lab and factory environments, ease of use is of extreme importance. Most of these users are quite expert in what they do, and they share the attribute of not being computer experienced. Data-acquisition systems are a means to an end. If you can provide a system that is easier to use, it is quicker to reach that end. The Mac allows that beautifully," said Avery Dee, vice president of marketing for Strawberry Tree Computers of Sunnyvale, Calif.

"One of the things that is frustrating with PC-based data-acquisition systems is that they are real powerful, but they have problems getting output from the program. With the Mac, it is much easier to take data out of acquisition software and into other programs for graphics or statistical manipulation. Linkage with other programs and the graphics capabilities make the Mac stand out," said Paul Daley, an environmental scientist with Lawrence Livermore National Laboratory's environmental sciences division in Livermore, Calif.

Daley also said: "I even see people who are heavy PC users, who would much rather use the Mac for at least the final phases of a project. Its ability to get data out into other applications easily, coupled with its ease of use, make it a fine machine."

Experts also say the Mac II's power, plus the Mac's graphical interface, make the Mac attractive for users and vendors. "The central processor is definitely more powerful on the Mac. We feel that the Motorola 68000 family provides better power over the Intel family for those types of applications," Eckhardt said.

Daley said: "One of the products we've been using is National Instruments' LabView. LabView, with its icon-based environment, really shows off the Mac. With the new boards and the Mac II environment, it should become a much stronger product in terms of throughput." ■

DESK ACCESSORIES

Continued from Page 1

dent of Solutions Inc. in Montpelier, Vt.

One developer questioned Apple's support of Desk Accessories in future versions of MultiFinder.

"Currently there are two camps at Apple debating the future of DAs. The original creators of MultiFinder said DAs would not be supported. But once they came out of the development vacuum, there was a lot of protest. Now, the understanding is that DAs will be supported by the first version of MultiFinder," said the developer, who asked to remain anonymous.

Manny Menendez, president of Deneba Systems in Miami, said he doesn't believe that Apple intends to abandon Desk Accessories. "There is no technical reason to take away MultiFinder's support of DAs, and the indication is that all future versions will support DAs," he said.

There will always be a need for Desk Accessories as small utilities because they are more convenient to use, said Menendez. But with MultiFinder, there will be no need to develop complicated and powerful Desk Accessories, he added.

"Desk Accessories will not disappear," said Michael Holm, special products developer for Apple. "But the proliferation of DAs will probably decrease in view of the MultiFinder's multitasking environment."

During the next year, Holm said, programmers will turn their attention to the development of small applications that take advantage of MultiFinder's multitasking capabilities.

For now, Desk Accessory developers are hedging their bets by releasing their software in Desk Accessory and application form. The application version of Spelling Coach from Deneba Systems is included in the purchase price of the Desk Accessory version, and Solutions Inc. released a similar package for Viewer at Mac Expo. ■

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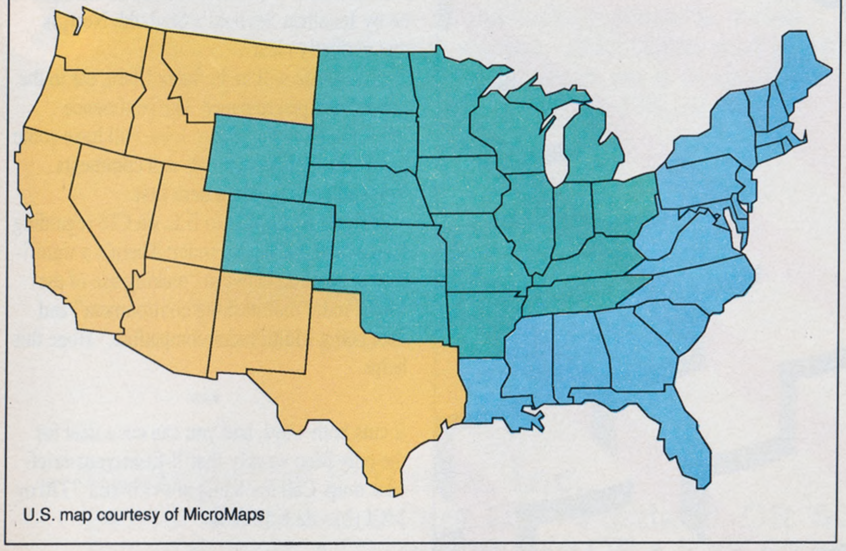

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MAC THE KNIFE

Waiting for HyperStacks: Who was first on the street with commercial softstacks? Yup, it was those crazy MeeseCo Brothers and their bluer than blue hypermovies. Better watch it, guys, or next thing you know Tipper Gore will be lobbying Congress to put warning labels on 3-inch disks.

One place you won't be able to buy the product is the Apple Store in Cupertino. That's where you can get all those Apple-logoed generic yuppie goodies from Apple's catalog. While you're there, check out the point-of-sale system. It's running on a Mac, but it's not written in 4th Dimension. No, they chose another database. Was speed the issue? Hardly, since the cashiers are always complaining about how slow it is. More likely, the decision was influenced by internal politics.

Paring the Apple

Speaking of which, the endless power struggle at Apple goes on. Some big names are involved, and the Knife's best boardroom source says heads could roll. It's too early to start handicapping, but stay tuned to this space for more Apple juice.

The Omnis Windows sneak preview in Boston made some Mac developers green with envy. This Windows version is at least two steps ahead, with a lot of Mac-like features (fonts, radio buttons) that aren't available in the Mac version. There are so many new features, in fact, that there's no file compatibility between the two versions. You get the impression that Omnis is more interested in having the first powerful database running under Windows than in having the first database that runs in both environments. Is Omnis returning to its roots?

As usual, beta testers are talking, and by now you've read about the upcoming DOS Word 4.0 from Microsoft. Looks like a winner, with a lot of useful features, not the least of which is speed. It's unusual for a beta to be fast, but 4.0 is just that. Even die-hard WordPerfect fans admit 4.0 significantly closes the gap between the two major DOS word processors. So big deal, you say, what does this have to do with the Mac? Well, consider this: With the eagerly anticipated FullWrite and WordPerfect imminent, you can just bet that Microsoft isn't going to rest on its laurels.

Beach Blanket Babylon: From John Sculley's mouth we hear, "Don't say we'll never bring out a portable Mac." It's just too hard to do right now, he says. For example, the screen takes up a lot of power. "At some point in the future, it may be possible." Does that mean they've got some new screen technology up their sleeves? Maybe yes, maybe no. But all of a sudden beach ware is back in fashion.

Workstation redux: Action and reaction. Is NeXT the only workstation player considering Mac emulation? You might think so since you never hear about the other guys working on it. Maybe they're waiting for the legal dust to settle before making their move. Or then again, maybe NeXT is the only company that can pull it off. You decide.

Paint by Cray

Whatever happened to MacPaint 2.0 Part II? The question has been asked before, and the answer has always been that it's being held for Claris. But now the Knife hears that Apple is hard at work on a brand-new Paint program at this very moment, keeping that Cray humming. This program is a total departure from MacPaint, with a long laundry list of new features, including color.

A Seybold-by-any-other-name department: When is a Seybold Conference not a Seybold Conference? Perhaps when you have a big family with a respected name with everyone angling to get a piece of the action. For instance, the recent Seybold Conference on Desktop Productivity in Boston was really a Seybold/Infonetecs Conference. The big conference in September in Santa Clara, Calif., the one with all the new products and technology demonstrated, is the Seybold Conference put on by Jonathan Seybold's Seybold. Now, is that perfectly clear?

The Knife will be in Santa Clara, ear to the ground and pen to paper. The conference speakers, including Steve Jobs, will have some interesting announcements and comments. Remember, you read it here first.

Private KnifeMail to B.L. on CIS regarding HyperCard and MultiFinder: There's a significant distinction between "making use of the MultiFinder multitasking environment" and "not being MultiFinder compatible." Hope this helps.

***

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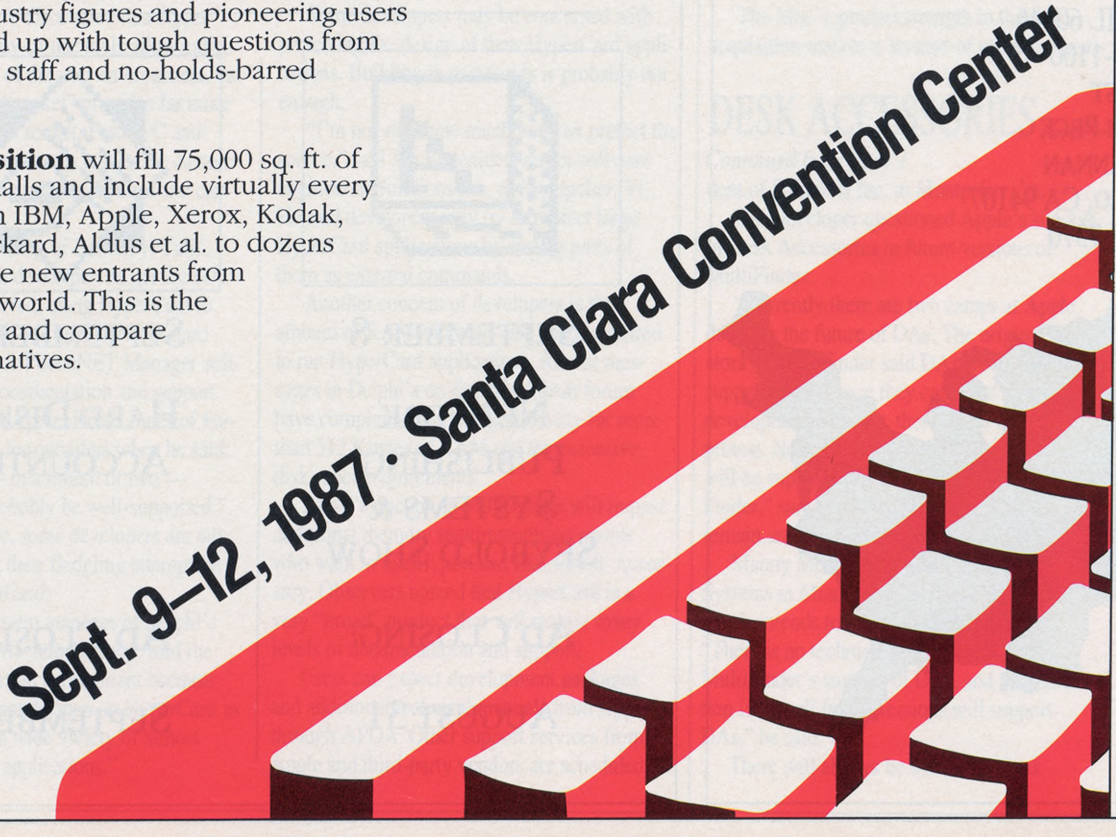
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